Value-priced notebooks get the job done and save users big money. Buyer's Guide, page 81

An MBA? [illegible] you learn pu[illegible] career path. Managing, page [illegible]

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Big iron R/3 spells relief

▸ *Hybrids offer help for high-volume apps*

By Randy Weston and Tim Ouellette

USERS CAUGHT in the tug-of-war between mainframe and client/server technology are finding relief in hybrid systems.

The major application vendors, led by SAP AG, are moving their business process software to mainframes and mid-range systems such as IBM's S/390 (available later this summer) and AS/400 (shipping now).

For example, the semiconductor product sector of Motorola, Inc. is preparing to install an S/390 as the database layer of its new worldwide R/3 installation.

"We were concerned other offerings that were a combination of Unix and databases would not scale to the size we needed with the level of assurance we needed," said Pat Horrigan, director of IS at the Tempe, Ariz., firm. "If we had to split the database into multiple instances of R/3, we would lose a lot of the benefits of integration SAP offers."

Motorola Semiconductor was one of five pilot

SAP R/3, page 107

Stanley's Jim Gustavson: R/3 move driven by business

NC users overcome early Java glitches

By Sharon Gaudin and April Jacobs

AFTER BEING plagued initially by buggy, immature systems, some early users of network computers are finally seeing a smoother road ahead.

For example, transportation giant CSX Corp. early this year found more than a few bugs in its Sun Microsystems, Inc. JavaStations.

Programs would freeze, moving among applications was painfully slow, and server connections were unreliable.

But today, information technology managers at CSX are impressed enough to move beyond the testing phase and buy 125 JavaStations. The boxes will monitor a variety of railroad

NC users, page 107

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Irish talent pool lures U.S. firms

By Julia King

FORGET THE "Troubles." Northern Ireland is looking mighty bonny to talent-strapped U.S. companies in search of experienced and readily available software developers.

Since January, five U.S. companies have opened information systems research and development centers in and around Belfast. Among them is Boston-based Liberty Mutual Insurance Co., which plans to operate an offshore corporate IS

Irish talent, page 17

KILLER APPS

"Have there been deaths and injuries due to software? You betcha," says a U.S. Food and Drug Administration specialist. The FDA lists 450 cases of software defects in medical devices, such as a monitor that doesn't sound the alarm when a heart stops beating. Twenty-four of these cases resulted in death or injury.

Experts say the software for safety-critical systems often fails to reach the safety standards we demand of cars and lawn mowers. The problem is management inattention.

Managing, page 73

Finally! After five years of talk, **Oracle8** is shipping. But even users such as **Hugh Allan** of **Dunlop Tire** (left) won't migrate to the database for months. And users of **SAP R/3** and other software are in a tight spot: **Wait for painful ports to Oracle8 or stick with a generic database** that lets them choose software separately.

Software, page 59

UP FRONT

on Microsoft

Microsoft denies reports that it's interested in buying CBS, but wouldn't it be interesting if the deal went through? Think of the fall lineup:

As the World Turns **— Lucinda decides to reveal via an MSN chat room that she is David's mother. Lily and Holden's relationship blossoms, thanks to a cable modem. Holden is devastated when a rogue ActiveX application causes a memory page fault.**

Cybill **— Maryann gets drunk and has a hysterical conversation with a spell checker.**

60 Minutes **— Part 11 of an ongoing investigative series into the finances of Netscape president Jim Barksdale. This week: his Discover Card.**

The Nanny **— Fran dumps the whole Sheffield brood and moves to Seattle to work inhuman hours because, well, she's changing the world. And earning stock options.**

Late Show with David Letterman **— Dropping network computers off a 12-story building; The Top 10 Similarities Between Java and Hernias; Dave gets virtual dental work.**

Fran dumps the Sheffield brood and moves to Seattle to change the world.

48 Hours **— Government Rot: The disgraceful condition of the U.S. Department of Justice.**

Nathan! **(debut) — This week: Woman who love men who have browsers who hate Java-class libraries. Your host: Microsoft CTO Nathan Myhrvold.**

Chicago Hope **— Dr. Kate Austin faces a dilemma when a patient's medical history file keeps defaulting to 12-point Courier. Windows 95 Service Pack saves the day. Dr. McNeil's gambling addiction surfaces again on a trip to Comdex/Fall '97.**

Geek Wheel of Fortune **(debut) — Contestants vie to guess missing hexadecimal codes and win an all-expenses-paid trip to WinDev '98.**

The Young and the Restless **— Victor and Diane steal away for a romantic weekend, getting a terrific discount by booking their reservations with Microsoft Expedia. Danny and Phyllis upgrade to Office 97.**

CBS Sunday Movie: *Sleepless in Seattle*

Paul Gillin, *Editor*
Internet: *paul_gillin@cw.com*

THE FIFTH WAVE
BY RICH TENNANT

"NOW, JUST WHEN THE HECK DID I INTEGRATE THAT INTO THE SYSTEM?"

E-mail Rich Tennant at thewave@tiac.net

Spec delivers E-mail security

▸ *S/MIME seen as enabling electronic commerce*

By Barb Cole-Gomolski

WITH A REVAMPED specification for secure E-mail due next month, products that pave the way for safer Internet mail are expected to be widely available by early next year.

A draft document of Secure Multipurpose Internet Extensions 3 (S/MIME 3) obtained by *Computerworld* outlines several additions to the specification that could make electronic mail a more bulletproof way for companies to conduct business over the Internet.

S/MIME is considered key to shoring up today's E-mail systems, which were designed to run on closed networks, not the Internet.

CREDIT-CARD SALES

For example, with S/MIME, a credit-card transaction could be ferried safely over the Internet within an E-mail message.

The extensions include the addition of signed receipts, labels that identify the sensitivity of messages and the ability to send encrypted messages to a mailing list.

"Things like signed receipts are very applicable to our business," said Mark Lussier, lead software engineer at DHL Systems, Inc., the information systems division of DHL Worldwide Express in Burlingame, Calif.

In addition, secure mailing lists could be used to send over the Internet a company newsletter that contained sensitive information, users said.

S/MIME defines how the contents of a message may be encrypted and how the identity of the sender can be verified with a digital signature.

ON TAP FOR S/MIME

- Signed receipts
- Labels that describe the sensitivity of E-mail messages
- Secure mailing lists

The additions to the S/MIME specification were drafted by a group that includes representatives of the Internet Mail Consortium (IMC) industry group in Santa Cruz, Calif., and government contractors well-versed in the rigorous security demands of government E-mail networks.

A formal draft of the S/MIME 3 specification isn't expected until next month, and products that support the changes may not show up until next year, according to Paul Hoffman, co-chairman of the IMC.

This is a critical time for S/MIME in general. Although it is becoming a de facto standard, S/MIME hasn't yet received the official nod from the Internet Engineering Task Force.

"S/MIME will become a market standard before it becomes an Internet standard," said Mark Levitt, a research manager at International Data Corp. in Framingham, Mass.

Indeed, most of the major messaging vendors have committed to supporting S/MIME, and their plans are beginning to gel.

Lotus Development Corp. last week announced plans to support S/MIME in its Domino servers and Notes clients in next year's first quarter. Netscape Communications Corp. last month shipped its S/MIME-compliant Communicator browser, and Microsoft Corp. promises S/MIME support in Internet Explorer, due later this year.

Also, RSA Data Security, Inc. in Redwood City, Calif., last month published a description of a key encryption algorithm that provides interoperability between domestic and import versions of S/MIME-compliant products.

Marty Wiegle, manager of messaging at Fannie Mae in Washington, said S/MIME is a large component of the agency's security plans.

But Wiegle said additional E-mail security issues aren't handled by S/MIME. "We want to restrict who can send E-mail into our company, and we're interested in scanning for viruses before mail gets to users," he said. □

Cisco Catalyst switches add routing

By Bob Wallace

CISCO SYSTEMS, INC. users now can get switching and routing in the same box, thanks to a module the vendor began shipping last week for its Catalyst 5000 LAN switch line.

Providing users switches with built-in routing means firms can save money and labor costs by reducing or eliminating their dependence on stand-alone routers, which can be difficult to administer and manage.

"After we started using the new routing module, we shut off our high-end Cisco router, and the routing performance has been better," said Trey Layton, a network systems engineer at Eastman Kodak Co. in Rochester, N.Y., a longtime Cisco user.

"The module handles routing for 800 to 1,000 nodes in our research and development operation," Layton said.

Although many LAN switches have — or soon will have — built-in routing, many won't be able to route more than one or two protocols, which spells trouble for users with legacy LANs.

With the Route Switch Module (RSM), the San Jose, Calif., vendor's Catalyst switches can handle all major and many minor protocols such as Internet Protocol, IPX, AppleTalk, DECnet, Vines, Xerox Network Systems and SNA.

The RSM costs $19,995 and is available for the midrange Catalyst 5000 and high-end Catalyst 5500 LAN switches. □

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Philadelphia fined in software piracy case

By Julia King

IT BEGAN WITH a whistle-blower's call to an antipiracy hot line.

It ended last week with the city of Philadelphia shelling out almost $122,000 in fines to the Business Software Alliance (BSA), which claimed that two city offices had made hundreds of illegal copies of several different software programs.

The payout marks the first public disclosure of a settlement with a government entity, although other agencies have been caught and quietly settled claims.

The city acknowledged that workers did copy software, but "the settlement contains no admission of liability on the city's part. What we're talking about here is something that was inadvertent," said Kevin Feeley, a spokesman for the mayor.

To refer to the case as one of software piracy "lends it an open-air, high seas, Blackbeard thing that I just don't think is applicable," Feeley said.

Bob Kruger, vice president of enforcement for the Washington-based watchdog group, said software piracy in government offices "is as pervasive as it is in the private sector."

"Part of our mission is to create a deterrent. So when we decide which cases to publicize, we're looking for those with the greatest impact," Kruger said.

The BSA contacted city officials after it received the anonymous telephone tip about the two city agencies, Kruger said. Officials agreed to conduct a self-audit of the agencies' computers. That audit turned up "hundreds" of illegal copies of several standard desktop applications from Lotus Development Corp., Microsoft Corp. and Adobe Systems, Inc. — all BSA members, Kruger said. □

It takes a techie

The talent crunch is the mother of recruiting creativity. Julie Yancey and her colleagues at Federal Express Corp. had trouble luring college grads to Memphis — so they set up new IS offices in trendier locales. FedEx and other large firms also find that putting some good IS people on the road to hunt for new hires can pull in prospects other recruiters can't.

Corporate Strategies, page 43

Seagate reels in start-up

▸ *Quinta brings drive technology onboard*

By Matt Hamblen

SEAGATE TECHNOLOGY, INC. in Scotts Valley, Calif., last week announced that it will buy storage start-up Quinta Corp. to meet future customer demand for high-capacity online storage.

In essence, Seagate decided to buy, Quinta's advanced drive technology rather than try to develop the technology itself, Seagate President Alan Shugart said.

NEW TECHNOLOGY

Quinta, based in San Jose, Calif., is developing optically assisted Winchester drive technology, which will allow up to five times the storage capacity of a Winchester drive, Quinta officials said.

A product should be announced by year's end, but officials from the two companies wouldn't provide many details.

Seagate reportedly will pay $230 million for Quinta. And Quinta could earn another $95 million by meeting certain product deadlines, company officials said.

Seagate is a $9 billion company that supplies high-capacity hard drives to vendors worldwide, including EMC Corp. in Hopkinton, Mass.

Analysts said Seagate's purchase of Quinta is a hedge against alternative technologies that could encroach on its lucrative, high-end storage business. Seagate is "watching their backside" with this purchase, said a storage analyst who asked not to be identified.

One alternative technology comes from TeraStor Corp. in San Jose, Calif.

TeraStor plans to ship Near Field Recording Drives, which have up to 10 times the capacity of conventional hard drives, by next year. □

CA's object database gets two-step release

By Craig Stedman

COMPUTER ASSOCIATES International, Inc. next week plans to debut its long-promised Jasmine object database. But it will be another three months before the production version of Jasmine is ready for use.

At its CA-World '97 conference in New Orleans, the company will release only a single-user evaluation copy of the object database, which is aimed at multimedia and World Wide Web applications that involve complex forms of data.

In addition, users who had demanded a beefed-up Java implementation for Jasmine will have to buy that as a separate product from a small Silicon Valley software vendor, rather than from CA.

Jasmine originally was due late last year, but it got delayed because of the demands for more extensive Java support [CW, Jan. 27].

The database was then targeted for delivery by the middle of this year. But now, shipments won't start until the end of September, said CA officials in Islandia, N.Y. The revamped third-party Java implementation began beta-testing just last week, and CA also wants to finish a Windows NT port of Jasmine before releasing the database.

Financial Technologies International, Inc. (FTI), a software vendor in New York, is counting on Jasmine to be out in time to meet its fourth-quarter schedule for testing a Java-based application that will let end users store financial information as objects in the CA database.

"If there are more postponements, then we'll have a problem," said Predrag Dizdarevic, FTI's president. The company will use relational databases on the back-end pieces of an upcoming system for consolidating financial transactions, but it wants to tap the object capabilities of Jasmine to let users do complex data analysis.

Dizdarevic said he would prefer to get the promised technology for directly linking Java applets to Jasmine from CA rather than another vendor. That would "give us the guarantee that [CA] stands behind it," he said.

TOUGH SELL

Rich Newman, executive vice president at Insyte, Inc. in Newton, Mass., said the ongoing wait for Jasmine makes it hard to interest customers in the object technology. Insyte plans to use Jasmine to add multimedia support to its financial data analysis software.

"Customers aren't coming to us for futures," Newman said. But shipping Jasmine before it is ready would be "the worst thing CA could do," he said. "I want them to release a finished product."

Rather than following the hybrid object/relational path that Oracle Corp. and other database vendors are taking, Jasmine is a pure object database (see chart). Features include a codeless object development environment called Jade and a series of SQL-class libraries for pulling data out of relational software. □

OBJECTS VS. HYBRIDS

Guinness' John Stumpf taps DSS apps to quench user thirst for sales data. Corporate Strategies, page 43

Better be on your best behavior to survive the behavioral interview. IT Careers, page 85

Crisis management systems must improve to better respond to disasters. In Depth, page 83

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Clinton's E-commerce plan wins industry nod

By Sharon Machlis

COMPANIES THAT CONDUCT electronic commerce largely support a Clinton administration plan to boost business in cyberspace — with the glaring exception of encryption policies, where Washington still seeks to maintain unpopular controls.

President Clinton's Framework for Global Electronic Commerce calls for limiting most government intervention on the Internet, including barring new 'net-specific taxes and opposing restrictions on Internet content.

The computer industry is expected to take the lead in developing standards for privacy, security and electronic payments. "We want to encourage the private sector to regulate itself as much as possible," Clinton said at a White House ceremony last week.

Washington officials also will seek fair access for online service providers to overseas markets and will try to thwart attempts to regulate World Wide Web site language, country of origin and other content issues.

Separately, the Information Technology Association of America and CommerceNet, two industry trade groups, announced an initiative to encourage businesses worldwide to work together and with the government to implement Clinton's plan.

ENCRYPTION ISSUES

The policy unveiled last week didn't lift export restrictions on most strong encryption software — now barred from overseas sales — without plans for storing decoding keys with another party. The administration says that is crucial for law enforcement access to encrypted data.

CLINTON'S PLAN FOR GLOBAL E-COMMERCE

- Private sector takes the lead to develop security, privacy and electronic-payment standards
- Internet becomes a free-trade zone within 12 months
- Uniform Commercial Code for the Internet establishes a stable legal environment
- Washington negotiates for fair access abroad for online service providers

Source: The White House, Washington

"We think it's a positive thing," said Pat Flynn, vice president of systems development at Fruit of the Loom, Inc. in Bowling Green, Ky. "Letting industry take the lead will get things done quicker."

But while companies may be best suited to develop robust technical standards for secure payment and the like, Flynn said government could help nourish the 'net by investing in high-speed infrastructure — much like Washington invested in the interstate highways.

"This is the right first step, no question about it," said Eddie Zeitler, senior vice president of information security at Charles Schwab & Co. in San Francisco. "The problems are always involved in the details."

The administration said it will lobby other governments and work through international agencies to make the Internet a "free-trade zone" within a year.

Industry groups have blasted the restrictions as a blow to U.S. businesses. Some privacy advocates are unhappy with administration plans to leave consumer protection in the hands of corporations. "The expectation is that self-regulation can be made to work. So far, self-regulation hasn't worked," said Marc Rotenberg, director of the Electronic Privacy Information Center in Washington.

Industry officials called for Washington to maintain some kind of watchdog role on the Internet. "I'm certainly in favor of the government not overregulating the industry," said Michael Forbes, director of information systems at Volvo Cars of North America in Northvale, N.J. "But I would have some concern if their position meant that there is no government oversight." ◻

Staff writer Patrick Thibodeau contributed to this report.

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TECHNICAL SECTIONS

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ETC.

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Staff writer Patrick Thibodeau contributed to this report.

IS YOUR BACKUP TOUGH ENOUGH FOR THE JOB?

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NCR jumps on data mart bandwagon

By Jaikumar Vijayan and Craig Stedman

WITH DATA MART vendors nipping at its heels, NCR Corp. is offering its Teradata users a way to build virtual data marts within their existing enterprise data warehouses.

As part of a new data mart program being rolled out this week, NCR will help corporations carve out specific departmental information from an enterprise warehouse and mold it for use as a "logical" data mart.

The approach gives Teradata users a quick and relatively inexpensive way to set up small departmental warehouses without an additional investment in hardware and software needed for a physical data mart.

Prices for NCR's logical data marts range from $37,000 to $82,000. NCR's physical data marts start at $250,000.

"If we could logically partition a base warehouse into specific data marts, then yippee!" said Tim Vokes, a senior database administrator at Anthem Blue Cross/Blue Shield, a Teradata user in Cincinnati.

"Departments could focus their data needs into these logical marts and not have to wade through the entire database looking for what they need. It makes things a lot faster," said Mark Frazier, staff manager of finance systems at Lucent Technologies, Inc.'s communications equipment unit in Basking Ridge, N.J.

The announcement is the latest in NCR's continuing bid to keep data mart vendors from poaching its Teradata users.

The Dayton, Ohio, company recently rolled back entry-level prices of its Teradata relational database management software by more than 33% — its second major pricing action this year (CW, June 30).

And NCR is working with Microsoft Corp. to port Teradata to the Windows NT operating system. The NT version is scheduled for delivery early next year.

NCR tried twice previously to get its data mart act together without much success, said Wayne Eckerson, an analyst at Patricia Seybold Group in Boston. "But I think this time it's going to be serious, because they're starting to get some incursions at the low end in [Teradata] accounts," Eckerson said. "The whole strategy here is to nip that in the bud."

Indeed, the data mart offering is aimed more at protecting the Teradata installed base than at attracting new users, said Robert Craig, an analyst at Hurwitz Group, Inc. in Newton, Mass. "NCR is just covering their flanks."

Teradata's orientation toward big, centralized data warehouses is opening the door to Oracle Corp. and other vendors that can provide the smaller and more focused data marts that have become fashionable, Craig said.

Data marts often are sold to individual departments or business units, "and that's something NCR typically hasn't done very well," Craig added. □

NCR'S DATA MART OFFERINGS

	Logical data mart	Teradata physical data mart
Platform	Existing data warehouse	NCR 4300
Operating system	NCR Unix	NCR Unix
Data mart package	OLAP and reporting tools, NCR services	Data extraction, replication OLAP and reporting tools, Web support
Price	$37,000 to $82,000	$250,000 to $300,000

& NCR plans eye scans to identify some teller machine customers. Page 45

Xylan slashes switched Ethernet prices

By Bob Wallace

XYLAN CORP. last week detailed a makeover of its already-versatile data center switch that will make it less expensive for users to deploy switching and gain advanced functionality.

The Calabasas, Calif., vendor plans to slash switched Ethernet prices by more than 50%, release Gigabit Ethernet add-ons and outfit the OmniSwitch with high-speed Layer 3 switching, which combines switching and routing in the same box.

Large corporate users benefit by paying less and getting far more for the data center switch. With those improvements, the switch can anchor enterprise data networks for many years.

"It's important for Xylan to drive costs down, performance up and introduce new technologies to prove to users that they're a viable alternative to the big four [internetworking vendors]," said Skip MacAskill, a senior research analyst at Gartner Group, Inc., in Stamford, Conn. "Not long ago, they were a start-up, and [they] have more to prove than the industry incumbents. This is proof that they're a serious contender."

IBM helped that effort by agreeing last year to resell Xylan's products.

Xylan plans to cut switched Ethernet prices by 59%, from $454 per port to $185 per port. It will also reduce Fast Ethernet switching to $454 per port.

The firm is developing two application specific integrated circuits (ASIC), which provide the power in LAN switches.

Xylan will use the two ASICs in a new version of its Hardware Routing Engine (HRE). Before, only one HRE could be used, and it supported routing at 425,000 packet/sec. Eight of the new models together support routing at 8 million packet/sec.

A raft of gigabit products is also planned. They include a Gigabit Ethernet module for the OmniSwitch and Gigabit Token Ring stand-alone switches and uplinks for the OmniSwitch. □

Bay to support competing 56K modem technologies

By Bob Wallace

REMOTE USERS anxious for flexibility in establishing high-speed connections to the Internet and corporate servers will soon get some relief.

Bay Networks, Inc. in Santa Clara, Calif., last week announced that its remote access server will soon support 3Com Corp.'s X2 56K bit/sec. modem protocol in addition to K56, a rival scheme backed by Rockwell Corp. and Lucent Technologies, Inc.

Emory's Barbara Maaskant calls Bay's support of X2 a wise move

Bay is adding X2 support because it wanted to offer broader coverage and gain access to numerous 3Com accounts that use Bay's remote access servers.

When Bay's server can handle both the X2 and K56 modem schemes, users with either type of modem will be able to dial in to Bay's server.

In September, Bay will offer X2 support as a free software upgrade for a card in its 5000 MSX remote access server.

The X2 support is good news for Barbara Maaskant.

"The consistency of technology across the two vendors' products and the speed are very important to us, as we are primarily a 3Com shop but have a Bay server, too," said Maaskant, executive director of information services at Emory University's business school in Atlanta.

"Bay's making a very wise move that will also benefit 3Com users looking to gain high-speed access to [Internet service providers] with the Bay system."

Emory technicians will be able to use X2 modems to dial in to the Bay server and perform maintenance on the school's servers, Maaskant said.

The dueling 56K bit/sec. modem technologies offer users a substantial speed boost over mainstream 28.8K bit/sec. modems and the less widely used 33.6K bit/sec. modems.

The International Telecommunications Union standards body is expected to complete its 56K bit/sec. modem standard next January. Bay and 3Com products that use the standard will also be able to support X2. □

Tool watches intranet performance

By Patrick Dryden

NETWORK GENERAL CORP. is filling a gap in its tool kit for monitoring client/server networks by giving managers a user's view of performance.

A browser-based software component, available this week, can help central managers diagnose slowdowns experienced when users connect to an intranet or the Internet.

That means managers can for the first time use Network General's Service Level Manager to get a user's view of performance. The tool kit, which shipped in February, had reported on only network and server activity to help managers focus on potential problems.

The new browser capability comes through Net.Medic Professional from start-up VitalSigns Software, Inc. More than half a million copies of a personal Net.Medic version have been downloaded in the past two months, according to officials at VitalSigns in Santa Clara, Calif.

Net.Medic measures the time required for the client, the network and target servers to complete their part of a task, such as fetching a document.

The Professional version can constantly monitor and reveal details hidden from casual users. But the initial combination lacks the ability to easily aggregate information for managers who deploy several client monitors. Planned upgrades will address this problem.

Service Level Manager 1.2, which includes Net.Medic, is available from Network General in Menlo Park, Calif., for $4,995. It requires Windows NT Server and a SQL database. □

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Vertical industries rev extranet motors

By Mitch Wagner

AN AUTO INDUSTRY group plans in three weeks to launch a 10-company trial of a private Internet-based network that could eventually span thousands of companies worldwide.

The initial trial of the Automotive Network Exchange (ANX) will involve Ford Motor Co., Chrysler Corp., General Motors Corp., Caterpillar, Inc., Deere & Co., TRW, Inc. and other business partners.

COMPUTERWORLD

For these and other related links, point your browser at www.computerworld.com/links/groupwarematrix.html

Extranets: The Complete Sourcebook, by Richard Baker: www.bookbooks.mcgraw-hill.com/baker

Linking Business Partners Via Internet Technology: www.pc-today.com/editorial/pointonline/970192.html

ANX organizers hope to go into production with the network in November, linking hundreds of automotive manufacturing companies, suppliers and other business partners.

The group plans to continue rolling out the network through next year. By 1999, the network should reach its full global stretch, said Richard Simmons, associate director of the Automotive Industry Action Group (AIAG), an auto industry consortium in Southfield, Mich.

The network will be used for electronic data interchange, computer-aided design and manufacturing informatioo and database applications.

It is one of several business-to-business, Internet-based networks — or extranets — being developed to connect players within vertical industries.

WIDESPREAD CONNECTIONS

The banking industry's Integrion Financial Network has its first two banks online, with six more expected by next March. The network was designed to provide home-banking services from 16 member banks.

VERTICAL INDUSTRY EXTRANETS

Extranet	Industry	Participants
ANX	Automotive	Chrysler, Ford, General Motors, UT Automotive
Integrion	Banking	Banc One, Bank of America, Barnett Bank, Comerica
WINconnect	Insurance	Aon Group, J&H Marsh & McLennan, Sedgwick Group, Willis Corroon group

WINconnect, a network that links four of the world's largest commercial insurers, went live last week, said Dennis Mahoney, chairman of the World Insurance Network.

WINconnect's Internet-based electronic-mail connections use Concert, a joint venture between MCI Communications Corp. and British Telecommunications PLC, as a carrier.

Vertical industry extranets help companies solve their connectivity problems all at once, rather than having each company build a system to communicate with a common set of suppliers, customers and other business partners.

Companies now often use hard-copy transfers, expensive one-to-one connections over leased lines, or proprietary data networks to share information.

"This sort of thing doesn't differentiate you, unless you do it poorly," said Bruce Luecke, general manager of interactive delivery services at the Bank One unit of Banc One Corp. in Columbus, Ohio. The company uses the Integrion service to provide home banking for its customers.

JOINT EFFORT

"Why do we need to reinvent the wheel and do something on our own if we can leverage the advantage of doing something with other companies that face the same problems? It's like using the telephone company to move transactions; we don't want to have to build our own telephone network," Luecke said.

The networks are run by separate associations set up by multiple companies in an industry. The auto industry's ANX is run by the AIAG. The Integrion and WINconnect networks are run by organizations that were set up solely to start up and establish those extranet projects.

The Integrion network uses IBM's Internet service provider, the IBM Global Network and data centers in Schaumburg, Ill., and Columbus to connect bank systems with customers. □

SHORTS

Oracle eyes the midsize

Oracle Corp.'s application division is launching a full-scale assault on SAP AG's move into the midsize market with a program designed for speedy implementations of enterprisewide software systems. Called FastForward, the program is similar to SAP AG's successful ASAP program, which helps midsize companies with rapid R/3 implementations. Oracle's program targets $50 million to $500 million companies. It includes a predefined implementation plan, the core suite of Oracle applications, Oracle Universal Database Server, support and training.

SBC challenges Telecom Act

SBC Communications, Inc. in San Antonio has filed a lawsuit challenging the constitutionality of the Telecommunications Deregulation and Reform Act of 1996. In a federal court suit filed last week in Texas, SBC alleged that the law violates the Constitution because it singles out the five Baby Bells by name and curbs their entry into long-distance and other markets. The Federal Communications Commission last week rejected SBC's bid to offer long-distance service in Oklahoma.

Updates kick Schwab off-line

A computer glitch at discount brokerage Charles Schwab & Co. potentially kept thousands of customers from determining whether their mutual funds and securities trades were processed. The problem — which affected Schwab customers who had placed telephone, online and face-to-face orders — was the result of the San Francisco-based company's nightly updates of individual account balances. A spokesman at Schwab said the problem was fixed and that customer impact was "sporadic." Schwab has 4.3 million accounts.

Lucent: Acer violated patents

Lucent Technologies, Inc. has alleged that Acer, Inc. infringed on eight patents for PCs and notebook computers. A lawsuit was filed recently in Wilmington, Del., federal court. In the suit, Lucent, in Murray Hill, N.J., said Acer and its subsidiaries in San Jose, Calif., and Santa Clara, Calif., violated Lucent patents covering semiconductor manufacturing technologies — including those for speech and video coding — and computer display technologies. Acer officials, who were surprised by the suit, said they would investigate the claims and seek cross-licensing agreements with Lucent, if necessary.

IBM to boost Token Ring

IBM next week is expected to detail plans for boosting the speed of 16M bit/sec. Token Ring to stem the migration of its users to Ethernet switching. IBM had said it would support "Fast Token Ring" at 100M bit/sec. but wouldn't say how or when that would be done. IBM's announcement will come just weeks after upstart Xylan Corp. in Calabasas, Calif., revealed plans to skip 100M bit/sec. Token Ring and release Gigabit Token Ring products in the fourth quarter this year.

Sterling buys TI software unit

Sterling Software, Inc. bought Texas Instruments Software from Dallas-based Texas Instruments, Inc. for $165 million. Sterling Software said the company will combine its Key software suite with TI's Composer technology to build a development environment — to be called Cool — for planning, modeling and building applications and components. Cool is slated to be out by year's end.

Platinum to buy Clientele

Platinum Software Corp. in Irvine, Calif., said it will acquire Clientele Software, Inc., a privately held maker of customer-service software, in a stock swap valued at about $11 million. Clientele, in Tualatin, Ore., will expand the product range of Platinum, a financial accounting software maker.

Compaq raises network profile

Compaq Computer Corp. in Houston last week raised its networking profile with the announcement of Fast Ethernet and Ethernet switches, two Fast Ethernet hubs and a network management program. The Netelligent 5708 Dual-Speed Ethernet Switch system can support desktops at 10M or 100M bit/sec. It will cost $2,392. The Netelligent 5226 Manageable Ethernet Switch has 26 ports and will cost $2,340. Both will ship in the third quarter.

SHORT TAKES **Sequent Computer Systems, Inc.** in Beaverton, Ore., has upgraded its NUMA-Q 2000 hardware to support 32 Intel Corp. Pentium Pro processors in one box. ... **Progress Software Corp.** in Bedford, Mass., has signed a $13 million deal to buy Newark, Calif.-based **Apptivity Corp.** for its Java database tools. ... The **U.S. Commerce Department** is seeking public comment on ways to revamp the registration of domain names on the Internet. Comments will be taken until Aug. 18, according to a notice at www.ntia.doc.gov.

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Intranet postings are just a click away

▸ *Microtest device doesn't require users to learn HTML*

By Matt Hamblen

MICROTEST, INC. in Phoenix enters the emerging Internet/intranet miniserver market today with WebZerver, a $1,595 device designed to let inexperienced users post pages to an intranet by clicking on a single button.

"Just by hitting the print button, it posts whatever you have on the intranet," said Robert Wilkinson, president of Technocratix, Inc. in Phoenix, who has been testing the device in recent weeks.

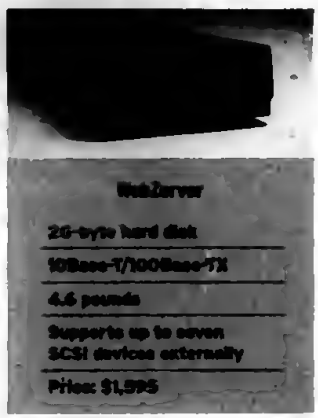
Wilkinson said his company might use the WebZerver to link the human relations department to an intranet. Department members could post retirement plan announcements and other public materials from their PCs to the intranet.

Technocratix hosts World Wide Web sites and might even use WebZerver to help users of those sites publish content without having to learn Hypertext Markup Language (HTML), Wilkinson added.

Analysts said such a device will probably interest some companies trying to employ departmental or remote-office Web servers. "It offers a lot of potential," said Tim Sloane, an analyst at Aberdeen Group, Inc. in Boston. "Companies could deploy it quickly and cheaply with almost zero administration."

MARKET TREND

Sloane and analyst Carl Howe at Forrester Research, Inc. in Cambridge, Mass., said the market for Web miniservers is at the beginning of a growth curve. Neither could say how large it might become.



Cisco Systems, Inc. in San Jose, Calif., has the best-known product that competes with WebZerver. Cisco's Micro Webserver costs $995 and has a 100M-byte Zip drive from Iomega Corp. in contrast to WebZerver's 2G-byte internal hard drive. The hard drive offers faster access times than the Zip drive, analysts said.

WebZerver lets users attach up to seven external storage devices, whereas Micro Webserver allows only one, analysts said.

David Wheeler, program manager for Internet projects at Phoenix-based Touch Technology International, Inc., said WebZerver could reduce requests to information systems managers for help in posting material to an intranet site.

Still, Wheeler said it could lead to "chaos" for IS, because WebZerver has "the potential for abuse because it opens up use of the intranet to a range of people." With so many users involved, IS needs to write policies for posting materials on an intranet site, Wheeler said.

WebZerver seemed too high-priced at first, Wheeler said. "But then I realized I don't have to buy another machine [such as a PC] to go with this," he said. "And it frees up a PC, potentially." □

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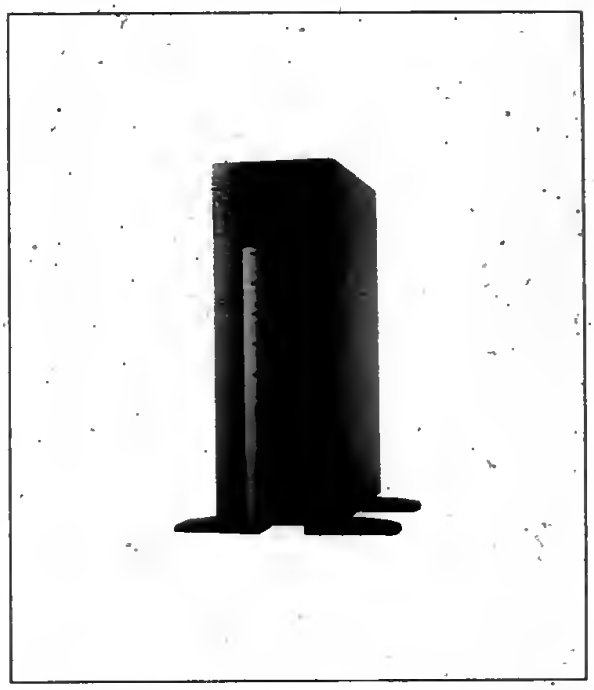

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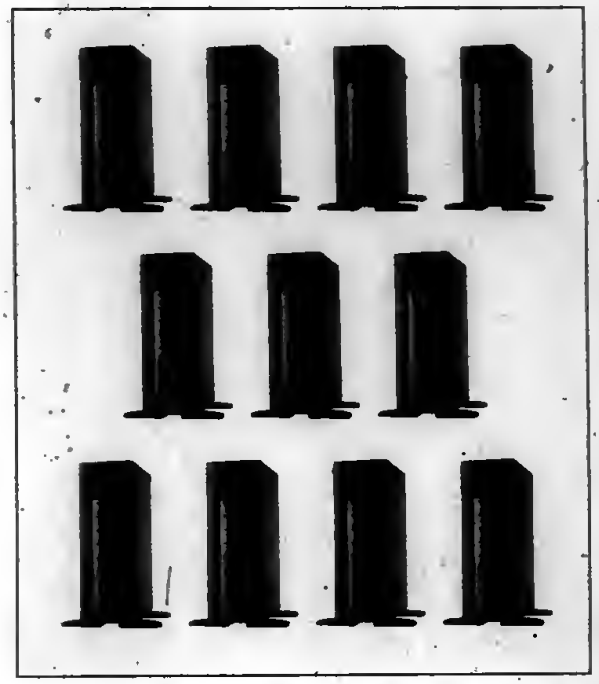
2,500 Microsoft Exchange Users on 11 NT Servers*



Data from Microsoft paid for Zona Research study

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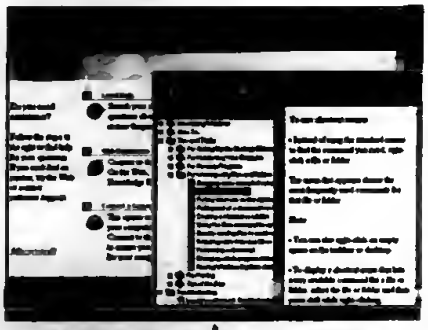
Memphis looks stable

REVIEW *Windows 98 still needs pieces to be compelling corporate upgrade*

By Chris DeVoney

MICROSOFT CORP. will unleash the first of several widespread beta versions of Memphis (also known as Windows 98) to more than 10,000 testers in the next few weeks. In working with a Memphis beta last week, I found a surprisingly stable operating system that is well-suited to evolving computers.



Memphis' help wizard directs users to on-disk help files or to troubleshooting experts available via the Internet

At the same time, Memphis is missing reduced-administration pieces that significantly reduce system cost of ownership. That makes it too soon to call the final product a compelling corporate upgrade.

Memphis is expected to be released early next year.

EASY, ROBUST

Memphis is easier to operate and more robust than Windows 95. But corporate managers should reserve opinions until other pieces are in place, such as a function to preserve the complete state of the system via Windows NT 5.0 and industry initiatives to make Windows applications self-diagnosing and self-healing.

By integrating the still-beta Internet Explorer 4.0 as the shell, Memphis dons a familiar yet improved look and interface. The idea is to apply one viewer and one user interface across all objects, be it a file on a local disk, a network resource or a World Wide Web page from an Internet or intranet site. But keep in mind that Explorer 4.0 also runs with Windows 95.

In my testing, I quickly adapted to the more consistent, single-mouse-click approach to running programs rather than double-clicking, and browsing seemed faster. The Web-related improvements include an autocompletion feature that fills out a uniform resource locator when you type a Web address, navigation history via the "forward" and "back" buttons and improved support for Internet standards and Dynamic Hypertext Markup Language (HTML). Those features make the shell more intuitive and a more powerful environment.

As with the prebeta version that was reviewed earlier [CW, April 14], Memphis matches Windows NT's communications skills, from remote access service to client support of virtual private networking through the Internet.

The beta release consolidates Microsoft's various Internet add-ons into the main product, which means the current versions of Outlook Express, NetMeeting and NetShow are joined by FrontPad (an HTML editor based on FrontPage 97) and the Personal Web Server.

Memphis is prepared for emerging hardware, including Universal Serial Bus (USB) and Digital Video Disc devices. I installed an Eastman Kodak Co. DVC 300 USB camera and worked immediately with a Hewlett-Packard Co. HP ScanJet 5P scanner in a "one-button" operation.

Some new performance tune-ups and tools are evident. For example, shutdown is much faster, and a performance wizard speeds the start-up of up to four frequently used programs by optimizing the layout of disk files. Microsoft Word and Internet Explorer 4.0 loaded in less than half their previous times, easily trimming four to 20 seconds of load time, depending on the speed of the computer.

Finally, several tools attempt to reduce administration and training. The help wizard directs users to on-disk help files or through the Internet to troubleshooting experts who can help resolve technical issues (although that system is still a work in progress). The file checker verifies and restores missing or damaged system files.

Memphis features a new troubleshooting program, a system information utility and the Doctor Watson system utility, all of which give users more comprehensive configuration information and problem diagnosis. □

DeVoney is a freelance writer in Seattle. He can be reached at chrisd@cybercritic.com.

New week; new bug; new fix

By Laura DiDio

IN WHAT IS becoming an almost weekly occurrence, yet another hacker found a vulnerability that let him hang Microsoft Corp.'s Windows NT Server.

Microsoft posted a fix within 24 hours after being notified of the weakness by the unidentified hacker, according to Mike Nash, Microsoft's director of infrastructure systems. In response to recent hacker attacks, Microsoft is beefing up its Quick Fix Engineering department, adding more equipment and engineers to the lab.

Microsoft also reconfigured the internal firewall at its Redmond, Wash., headquarters to block any would-be copycats.

All the recent hacks were from hackers looking for holes in the NT operating system, Nash said. None were attempting to penetrate a user's network, he said.

Last month, a Texas-based hacker told Microsoft that he had successfully perpetrated denial of service attacks on Windows 95 and Windows NT Workstations attached to a Windows NT Server and caused the server to hang.

That hacker created a malformed data packet containing an incorrect number of bits and bytes, with the deliberate intent to hang the Windows NT Server. □

Proxy Server ups security, has NT hooks

By Laura DiDio

MICROSOFT CORP. this week begins an open beta test of Proxy Server 2.0, which includes enhanced security features and better integration with Windows NT.

Proxy Server 1.0, which runs as an application on Windows NT Server, has been shipping since October.

It acts as a secure gateway to let businesses deploy one dedicated machine for Internet access by dozens or hundreds of users. And it provides intelligent caching for faster data access and minimal bandwidth overhead during peak usage.

Microsoft's Proxy Server, which lists for $995, provides baseline Internet security but lacks features found in more expensive stand-alone firewalls, such as sophisticated event statistics, reports, alarms and audit tracking.

Proxy Server 2.0 Pros

- Resists external penetration by hackers
- Easy to configure
- Inexpensive ($995)
- Integrates with Windows NT, Internet Information Server and Internet Explorer
- Provides caching to reduce bandwidth utilization
- Eliminates redundant traffic and downloads

Proxy Server 2.0 Cons

- Improper configuration can leave the network vulnerable to hackers
- Requires manual monitoring
- No automatic paging to a beeper if there are problems

"Microsoft's Proxy Server has saved us tens of thousands of dollars to connect to the Internet," said Eric Senf, a webmaster and systems engineer at Krause Publications, Inc., a privately held publishing company in Iola, Wis.

Senf said he chose Microsoft's Proxy Server over Netscape Communications Corp.'s rival offering because Proxy Server lets his firm access a wide variety of User Datagram Protocol connections for real audio and live videoconferencing, as well as online services such as America Online, CompuServe and Telnet.

"Proxy Server has saved us tens of thousands of dollars..."

Netscape's offering worked well, Senf said, "but it only let us do basic [file transfer protocol], [Hypertext Transport Protocol] and gopher. It cost the same as the Microsoft software but with fewer features."

He also said he liked Proxy Server's integration with Windows NT Server 4.0 security.

Proxy Server software also has established a presence in the academic community for its ability to block and restrict access to inappropriate or pornographic World Wide Web sites.

"In the nine months since we installed Proxy Server 1.0, we've been able to reduce our bandwidth overhead by 40% and cut our monthly phone bills by two-thirds — from $30,000 to about $9,000 a month," said Jerry Bishop, superintendent of schools at the Lee County Public School System in Lee, Va. "We're definitely upgrading to Proxy Server 2.0, because it will offer more security features and better monitoring. You can't have too much security in a school district."

Proxy Server's caching capability is also a big help for Wesley Cruver, the 14-year-old who runs Kidz Online, Inc. The nonprofit group in McLean, Va., teaches computer and Internet operations to schoolchildren in inner-city Washington.

"It's often difficult to access a heavily trafficked site, but the Proxy Server keeps calling until it gets into a site, and that saves us a lot of bandwidth and gets us to the sites a lot quicker," Cruver said.

Proxy Server 2.0 will ship this fall. □

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Greg Meekings, Managing Director, Corporate Technology Group, Reuters.

Playboy adds digital copyrights to images

▸ *Invisible watermark could deter photo pirates*

By Mitch Wagner

PLAYBOY, the magazine known for running pictures of women with staples in their navels, has put something else in those images — digital watermarks to help block Internet piracy.

Playboy Enterprises, Inc. in Chicago has signed on with Digimarc Corp. in Portland, Ore., which makes technology that lets companies put a stamp of ownership on images. Digimarc inserts into digital images data that is invisible to the eye but can be traced using Digimarc software.

"Copyright needs to be protected," said Eileen Kent, vice president of new media at Playboy. "In order for the 'net to become the commercial viable mass medium that it can be, you have to protect intellectual property. Otherwise, people are not motivated to make the kind of investment that needs to be made."

The nudes in *Playboy* are one of the most pirated commodities on the Internet. Individuals post the images on World Wide Web pages and Usenet newsgroups. And *Playboy*'s Web page (*www.playboy.com*) isn't the only source. Users also scan images directly from the magazine.

The Playboy trial is an early experiment for a kind of technology that hasn't seen a lot of success.

Copyright violations run rampant online, and technology to block the rip-offs has been sorely lacking, users said.

PAY-PER-VIEW

IBM, with a product called Cryptolopes, and First Virtual Holdings, Inc. in San Diego have attempted to provide copyright protection by making it easier for users to pay for information distributed online, but that technology has failed to catch on.

Playboy isn't the first company to use copyright protection technology online, but it is one of the most prominent.

"We're getting ripped off, and we don't see any real good solution," said Chris Pizey, a webmaster at Universal Press Syndicate in Kansas City, Mo.

Universal Press syndicates and posts to the Web "Dilbert" and "Calvin and Hobbes." The strips are icons for computer users and are frequently pirated.

Pizey said United Press has investigated blocking piracy with technology but has decided the options are too intrusive. They either require too much time to set up — because United Press posts 30 comic strips per day to the Internet, staffers need to be able to work fast — or they make it too difficult for legitimate users to access the United Press site.

In Playboy's case, once it has tracked down copyright offenders, it will contact the people who posted the image to ask them to remove it. If the pirates fail to comply, Playboy will consider legal action, Kent said.

Copyright law gives the copyright holder the right to control who is allowed to make copies and whether the copies are made for profit or personal use. However, in practice, it is difficult for copyright holders to collect damages from courts unless they can prove they have lost revenue.

Digimarc charges as much as $5,000 per year for corporate customers and $100 for individual photographers. The technology works with image, audio and video files, but Digimarc's products work only with images. □

Midlevel IS left juggling 'net duties

By Thomas Hoffman
NEW YORK

VALENTINA RABINOVICH has been dashing between intranet seminars to find database integration and other tools to intranet-enable legacy applications such as planning and financial systems.

Like other midlevel information technology managers, Rabinovich is becoming frustrated trying to juggle her intranet duties with her other tasks, which include technical writing and operations management.

Senior management "wants us to explore these technologies and what they can do for [our organization], but we have other responsibilities on top of that," said Rabinovich, an IT manager at Securities Industry Automation Corp. in New York, which handles back-end operations for the American Stock Exchange and the New York Stock Exchange. "It's very hard."

She isn't alone. Many midlevel IT managers are being asked to shoulder extra work as resource shortages and tight budgets keep information systems staffs lean and mean.

MIDDLEMEN

The problem for many midlevel IT managers is that they are getting caught in the middle of a lot of Internet-related hype. Executives "read stories in *The Wall Street Journal* about how other companies are using the Internet to make millions of dollars, and they want to know why their companies haven't done anything with it," said Richard Mandelbaum, president and CEO of Applied Theory Communications, Inc., a Great Neck, N.Y.-based intranet developer that sponsored an intranet seminar here last week.

To prevent its Internet-related projects from impacting its core operations, the Nasdaq Stock market has a team of developers that focuses only on World Wide Web-related projects, said Anthony W. Szerszen, manager of quality assurance and documentation in Trumbull, Conn.

"We realize there are a lot of people who would like to have opportunities to work with these technologies, but we have to keep our core operations running," Szerszen said. □

Web tool offers visual organization

By Mitch Wagner
SAN FRANCISCO

PERSPECTA, INC., a start-up firm based here, last week announced a software tool for graphically organizing and displaying information on the Internet and intranets. It presents an array of keywords that are linked by lines showing related subjects.

The SmartContent System was designed to make it easier to find and organize information on the World Wide Web. For example, applying SmartContent to a text database on terrorism would show a map of linked subjects such as bombing and hijacking.

Encyclopaedia Britannica, Inc. in Chicago plans to build a Web search engine using SmartContent later this year.

"The visual navigation provided by Perspecta helps users find insights they might not know about," said Joan Julian, vice president of online services at Britannica.

The software uses a Java server that runs alongside a Web server and creates an index of the database via automated word searches and manual intervention using SmartContent tools. The information is stored in an Informix Corp. Universal Server database.

Users view the map of data using an Internet Java client. The client invokes the user's Web browser to view the pages.

Dallas-based Sabre Group is evaluating Perspecta's SmartContent for possible deployment in its business and consumer travel services. Terrell Jones, president of Sabre Interactive, said the company is more likely to provide it to travel agents than consumers who visit its Web site.

Sabre Group is reluctant to provide the data-visualization tool to consumers because they might find it confusing, Jones said. The interface is intuitive after just a few minutes of training, but consumers will be unwilling to spend those few minutes, he said.

"It's like the first time you saw Windows if you'd never seen it before. You need someone there to explain it to you. How do you do that on a consumer site?" Jones said.

The Perspecta server would allow Sabre to organize travel data for users in multiple views, Jones said. For instance, a user looking for outdoor activities could see clusters of topics representing travel plans for swimming, boating or skiing. Another user could see the same information organized by location.

Perspecta isn't alone in offering graphical renditions of online information. Digital Equipment Corp.'s Alta Vista search engine also displays graphical, Java-based conceptual maps of its information searches.

Perspecta's SmartContent server software and tools are available immediately. Prices start at $30,000. □

Perspecta's SmartContent arranges information graphically on the Web

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IS chief: Year 2000 a fraud

▸ *Starr says most firms can easily fix problem*

David Starr, recently named vice president and chief information officer at The Reader's Digest Association, Inc., calls the year 2000 "the biggest fraud perpetrated by consultants on the business community since re-engineering."

Although some systems can't distinguish between the 20th and 21st centuries because they recognize only two-digit years, he said, most IS organizations can fix that in the normal course of business.

FORREST SUMPTER/CNS

Starr, the former CIO at ITT Corp. and at the Payment Products Division of Citicorp and a former senior manager at Price Waterhouse, spoke with senior editor Robert L. Scheier.

CW: Why do you call the year 2000 problem a fraud?

STARR: I was a consultant for half my career. I know what they're doing. As a CIO, I get copies of the letters people send our CEO and our CFO, and it's a terror tactics. "The elevators are going to stop, and airplanes are going to fall from the sky, and your ATM's not going to work."

CW: But couldn't some of those things happen?

STARR: If everyone went along the way they're doing now and didn't do anything about the year 2000, some of this will happen. [But] people are going to do something. The vendor is targeting ... nontechnical people who don't know any better.

CW: Doesn't the complexity of just finding year 2000 bugs make it a major problem?

STARR: You have to do a risk analysis of the cost-benefits on it. You look at your key systems, and of your key systems, which are going to be likely to have year 2000 problems. But [you don't need to] bring consultants in for millions of dollars to do some proprietary fix for something as basic as changing something from two characters to four characters.

> "As a CIO, I get copies of the letters people send our CEO and our CFO [about the year 2000 issue], and it's terror tactics."
>
> – David Starr
> The Reader's Digest Association

CW: Even when you identify your key programs, isn't it complicated to find the date routines in them?

STARR: [Cobol development shops] have scanning technology and text editors; you just go through and look for dates.

CW: How about the need to take all these programs out of production, test them, reintegrate them, and to manage and coordinate all the work?

STARR: Anybody who's got a development organization has change control procedures. [You do them] the same way you would change any other bug, change or enhancement. It's nothing unusual for a development organization.

CW: It's also not unusual for most information technology organizations to deliver applications late and over budget. Won't they do the same thing on year 2000 work?

STARR: Application development projects come in late and over budget because they don't have clear definitions up front. Most [IS] people know how to do the blocking and tackling of production systems.

CW: If this is so easy, why do so many year 2000 project managers say year 2000 work is more complicated than they thought?

STARR: Maybe the people you're talking to aren't hands-on people. Another thing that's even more insidious [is that] a lot of them are using the year 2000 to justify other projects.

CW: How does that work?

STARR: [Say] I wanted to get rid of this old, tired aystem for a long time, so I'm making people aware that it has a year 2000 problem and use that as a rationale for replacing this thing. If I went in and did a benefits analysis, I'd have a hard sell.

CW: If this is all so easy, where do you stand with year 2000?

STARR: We've got some issues, especially in Europe, where we've got some older systems. We're in the midst of doing detection testing [to find bugs]. We're not turning it into a big project.

CW: How big is "not big?"

STARR: Of my development budget, probably less than 5%. □

Browsing may become automated

Tim Berners-Lee, widely known as the father of the World Wide Web, is the director of the World Wide Web (W3) Consortium in Cambridge, Mass. He talked recently with Computerworld *Executive Editor Maryfran Johnson about the consortium's work, the future of the Web and the way technology is evolving to advance it.*

CW: Do you think the Web will inevitably be divided into distinct subgroups, essentially segmented into private and public places?

Berners-Lee: That model is one of really distinct boxes, and I don't think that will happen. The joy of the Web is that you can really select things from a huge world. When you select [places to go], rather than using just one set of boxes, you'll set your browser to use specific criteria, like links of endorsement from particular magazines you trust. You'll pick very selectively out of the whole thing.

CW: Aren't people doing that today with their bookmarks?

Berners-Lee: The bookmarks are a very important start to that, but they're a very crude one. They're a way of keeping a list of the important starting places, and keeping it full of good places to start. But your interests change, and sites change, and their quality degrades.

The process will become more powerful in the future, when you can not only put a site in your bookmark list but you can tell your browser that you give credibility to anything which has been endorsed by that site, once we have protocols for describing endorsement on the Web.

CW: There seems to be a general feeling of "Let the buyer beware" when it comes to dealing with the Web now. Will that change?

Berners-Lee: What the technology will do is automate that process of checking up [on sites and information sources]. There are two pieces to this. One is meta data, or information about information. If you tell your computer, "I trust anybody that is trusted by anybody that my mother trusts," then the computer, in principle, can go and follow those links and check any piece of information.

The other piece is the data format for expressing that sort of thing, for putting statements about trust on the Web: digital signatures and cryptography.

If you put those two together, you have not only meta data, but meta data which is being signed. So as your browser is going back trying to find out what the level of trust is in something you're reading, it will be able to read meta data and use rules not just about what documents say but also what keys they are being signed with.

SETH DILLOCK

Tim Berners-Lee

CW: Some people are worried about Microsoft Corp.'s role in influencing the W3 Consortium. Do you share this concern?

Berners-Lee: The consortium has a very open process. All of our 180 members and companies are free to participate, and in fact, the process tends to give the same weight to small companies as large companies. The consortium is growing, and we have to continually revise the process so it meets a balance between being very open and fair and at the same time being fast enough to operate at Internet speed.

CW: Can any standards body really work at Internet speed?

Berners-Lee: We're not really a standards body. What we produce are recommendations, which sometimes happens after the technical work.

It starts with crazy research ideas becoming prototypes, then being discussed and later on becoming generally deployed and finally stamped as standards. □

To hear a RealAudio interview with Berners-Lee, point your browser to: www.computerworld.com/. Click on the word "Archives," select "News" and then "News features."

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Irish talent lures U.S. firms

CONTINUED FROM PAGE 1

department in the region.

Liberty will hire 125 local IS professionals to develop mainframe and client/server applications that support the company's U.S. insurance operations. The insurer's initial investment in the center, known as Liberty Information Technology Ltd., is $5 million.

SUPPLY AND DEMAND

"The business benefit is there's a ready supply of excellent college graduates from computer science programs. Getting around the [U.S.] skills shortage is our main purpose," said Richard Connell, a Liberty vice president in Portsmouth, N.H.

Hiring IS talent from Ireland also saves money. The average starting salary for a computer science graduate in Northern Ireland is 15,000 pounds sterling, or about $24,000 per year. That compares with annual starting salaries in the U.S. of more than $40,000.

"Whether anybody admits it or not, America leads the world in software, and an American company will always be at the leading edge. So the chance to work for a company like that is a big attraction."
– Paul Wallace, Liberty Mutual

Paul Wallace is a 28-year-old software developer with five years' experience in client/server application development, Unix, C++, Windows NT and Notes. As one of Liberty's recent recruits in Northern Ireland, he will spend one year training at Liberty in the U.S. before returning to the Belfast IS shop.

Wallace will move to the U.S. with his wife and 10-month-old daughter in August. Liberty has arranged an apartment and even daily transportation to and from work.

"I was quite happy in my own job, but I saw Liberty Mutual as an opportunity to get involved with a new company that plans to grow," Wallace said. "Whether anybody admits it or not, America leads the world in software, and an American company will always be at the leading edge. So the chance to work for a company like that is a big attraction."

Each year, Northern Ireland's two primary universities produce between 600 and 700 computer science graduates and another 1,200 with dual degrees in computing and another discipline. But only about half of those graduates find jobs in the region, according to the country's Industrial Development Board.

So the board is aggressively marketing the region as a prime, untapped source of experienced IS talent. So far, about 40 hardware and software firms have located in Northern Ireland, which is known worldwide more as a hotbed of political violence than as a high-tech capital.

In fact, that's the main reason its plentiful pool of IS professionals has remained such a secret, said Bro McFerran, head of IMR Northern Ireland Ltd.'s software development center in Belfast. The center, which will eventually employ 300 IS professionals, is a subsidiary of Integrated Management Resources, Inc., a systems integration and outsourcing firm in Clearwater, Fla.

"Northern Ireland certainly doesn't have that romantic of an appeal when all you see is people throwing stones and getting shot," McFerran said. "But I've been in the software business here for 18 years, and we've never lost a day's productivity through the 'Troubles,' as we call them." □

& FedEx makes IS staff missionaries to recruit talent. Page 43

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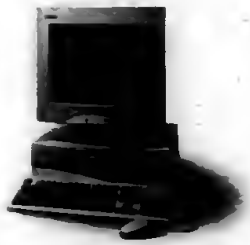

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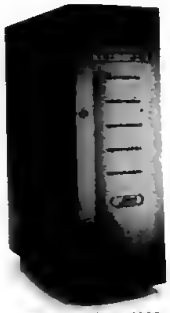

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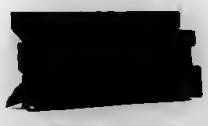

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Microsoft tries to reel in Java jumpers

▸ *Redmond to C++ developers: Write Java, but for Windows*

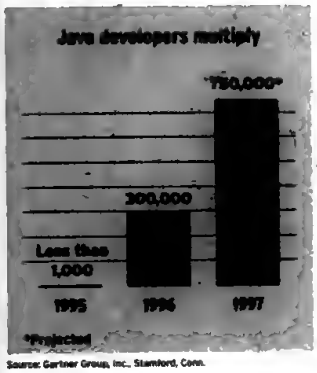
By Sharon Gaudin

MICROSOFT CORP. is casting its fishing net in an attempt to catch the C++ developers who may be switching to Java.

Research firm Gartner Group, Inc. has estimated that 60% of C++ developers are learning to write Java code. And given that major universities are dropping some C++ courses for Java programming, Microsoft is quickly beefing up its Java arsenal with extensions that link Java to its Windows platform and a souped-up virtual machine.

Users and analysts said Microsoft is positioning itself to make sure that developers who are making the switch don't also switch to cross-platform computing. Microsoft is sending the message that developers should use Java — to build Windows applications, said Evan Quinn, an analyst at International Data Corp. in Framingham, Mass. "The move to the Java language is going to occur. . . . They will support interoperability between Java and Windows. They don't want developers to have to make a choice," he said.

"There [are] a lot of C++ users who are migrating toward the Internet and thus Java," said John Hoover, a software engineer at Rochester, N.Y.-based Ortho Clinical Diagnostics, a division of Johnson & Johnson Corp. "Down the road, I see Java getting picked up more and more, especially as companies use the Internet more and more."



Source: Gartner Group, Inc., Stamford, Conn.

"The industry is seeing that Java is certainly a language that has some advantages over C++ when it comes to the Web and network computing," said Gartner analyst Daryl Plummer. He predicted Java's performance will catch up to that of industry powerhouse C++ in less than four years. Plummer said Microsoft wants to orchestrate the move so by the time developers switch to Java, they will actually be paddling deeper into Microsoft's waters.

JAVA EXTENSION

Microsoft announced an addition to its Virtual Machine for Java a week and a half ago. J/Direct, which will ship as part of Microsoft's Virtual Machine starting in July, will tie Java-built applications directly to the Windows platform by using Windows application programming interfaces. The Windows extension will be an option for developers, who still can choose to build 100% Pure Java applications that will run on any platform.

Microsoft also is touting its latest benchmark numbers, which mirror those done by third-party organizations. Those numbers show Virtual Machine for Java running faster than virtual machines from Netscape Communications Corp. and Sun Microsystems, Inc.

But benchmark numbers can seesaw.

Sun's benchmark, which came out last month, showed its Solaris operating system beating out Microsoft's Windows NT by about 700%. And Sun is expected to release a souped-up version of its Java Virtual Machine this fall, which will only further the competition. □

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FTC rejects call to investigate Microsoft

Trade commission defers to Department of Justice

By Laura DiDio and Stewart Deck

DON'T EXPECT the Federal Trade Commission to launch an investigation of Microsoft Corp. for alleged antitrust violations anytime soon.

The FTC and the Justice Department last week released separate statements saying the FTC will back off and let Justice continue its investigation of the Redmond, Wash., software giant.

"The Justice Department has been investigating," FTC spokeswoman Victoria Streitfeld said. "The two agencies never investigate the same thing at the same time."

The latest chapter in the 5-year-old antitrust saga pits members of the Senate Committee on Commerce, Science and Transportation against one another.

Ten days ago, three senators, unhappy with the progress of the federal antitrust investigation of Microsoft, requested that FTC Chairman Robert Pitofsky intervene and take control of the inquiry from the Justice Department.

Sens. Conrad Burns (R-Mont.), Ted Stevens (R-Alaska) and Craig Thomas (R-Wyo.) said they wrote the letter after receiving antitrust and restraint of trade complaints from Netscape Communications, Inc. in Mountain View, Calif., Microsoft's top rival in the Internet market, and Gateway 2000, Inc., a mail-order computer manufacturer in North Sioux City, S.D.

> "We are complying fully with the July 1994 consent decree. Anything to the contrary is false.

But two other senators — Slade Gorton (R-Wash.) and John McCain (R-Ariz.), the chairman of the Committee on Commerce, Science and Transportation — disagreed. They penned a missive asking their colleagues to leave Microsoft alone.

"Given the alacrity with which the [Department of Justice] has pursued its investigations of Microsoft's practices, we do not believe that it is necessary, or appropriate, for Congress to direct the FTC to investigate," they wrote.

In July 1994, Microsoft signed a Justice Department consent decree, agreeing to halt several licensing practices.

More recently, Justice responded to complaints that Microsoft gave computer makers discounts if they agreed to install Microsoft's World Wide Web browser exclusively. That would potentially cut Netscape out of the market.

Microsoft denied the charges. "We are complying fully with the July 1994 consent decree. Anything to the contrary is false," said Mark Murray, a Microsoft spokesperson. He called it "ironic" that the Burns letter would call for yet another government investigation "when there are two [Justice] actions ongoing now."

Justice Department spokesperson Gina Talamona said, "We're continuing our investigation, and obviously, part of that is monitoring the consent decree." Talamona declined to provide details, such as findings from the most recent interview conducted by investigators. □

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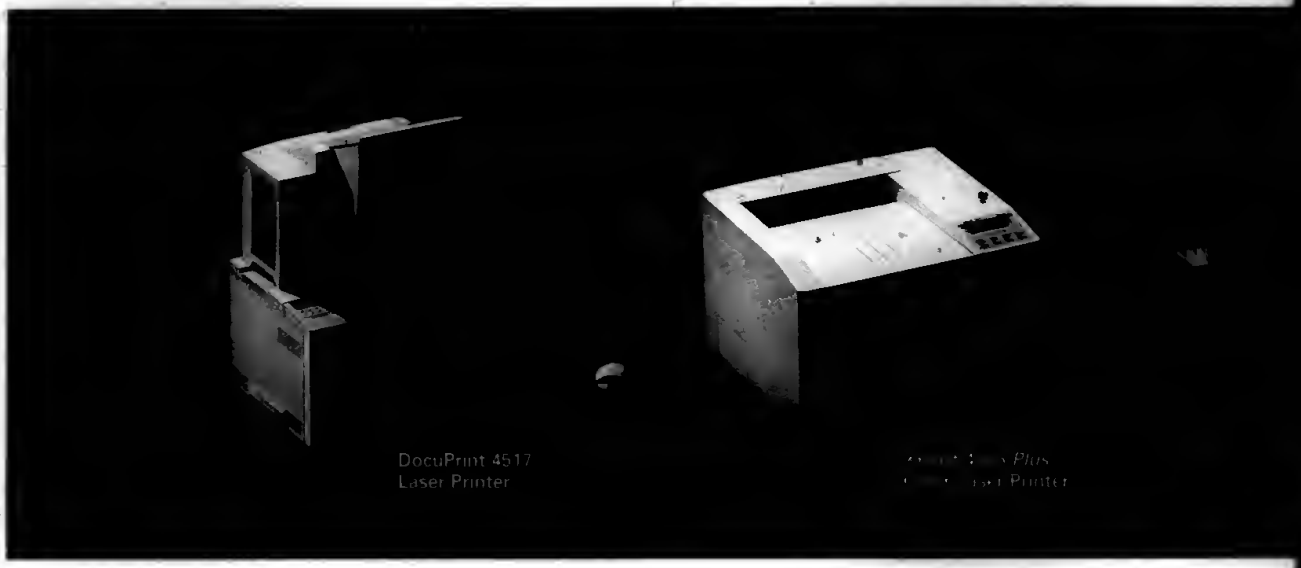

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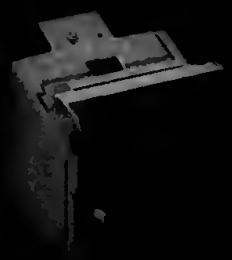

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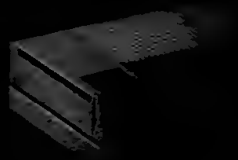

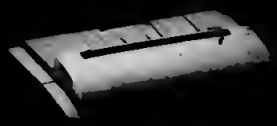

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Monitoring tools require support

▸ *Vendors bundle consultants with software*

By Patrick Dryden

EXPERTS NEEDED

Situation:
To manage service levels for users, IS must shift from fixing breaks to preempting slowdowns in distributed client/server environments

Problem:
Tools for monitoring performance of networks, systems and applications are unfamiliar and difficult

Solution:
Vendors seek broader field support through partnerships to help IS make tools work

DRIVEN BY demands for guaranteed service, IS managers are turning to performance monitoring tools designed to prevent network slowdowns.

But the new tools aren't helping much because they are complex, and information systems groups lack the time and expertise to put them to work.

"Droves of performance tools are coming out now, but it's hard to evaluate them all and then learn how to use the damn things," said Dan Howard, MIS director at Express Scripts, Inc., a pharmacy claims processor in St. Louis.

Tools that analyze networks, systems and applications are difficult to implement and require a high degree of customization, said Ray Paquet, a research director at Gartner Group, Inc. in Stamford, Conn.

"The tools are complex and immature; that combination is like mixing nitro and glycerine," he said.

To defuse the situation, vendors are trying to make more experts available to IS by teaming with consultants, integrators and one another.

For example, Cabletron Systems, Inc. plans to integrate performance-monitoring software from two vendors with its Spectrum network manager. First, though, Cabletron's 1,000 field engineers will support those tools to help Spectrum users tackle service-level management.

"Cabletron doesn't have all the expertise, so this partnership approach helps us get more value from Spectrum," said Bryan Ruhf, manager of Michigan's Consolidated Network Operations Center in Lansing. "That translates to real dollars saved for our agencies."

Ruhf said his staff of 30, which supports 40,000 users across the state, needs immediate help with tools that track network and application performance. The state agencies "are getting hard-nosed about reports," he said. "They feel at risk, so they want us to prove our service levels as a business partner."

NO LONG-TERM HELP

But expanded support through channel partnerships may benefit IS only in the short term.

"Consultants can walk in and help with general setup and variables, but they can't help me apply network management goals to my business goals," said Richard Wells, director of network services and support at Penn State Geisinger Health Systems in Danville, Pa.

These new resellers can help users get over the hurdle of implementing monitoring tools, analysts said.

Yet users must screen them carefully for experience, ability to provide ongoing maintenance and an understanding of network and business needs, analysts said.

Even though tracking overall service is crucial at Duke University, the availability of more tool experts won't really help, said Bob Currier, director of network communications at the Durham, N.C., school.

"It takes time to get outsiders acclimated to our environment, so we're better off doing projects ourselves," Currier said. □

Where the experts are

Tool vendors hope to put more experts in the field so IS can start tracking service levels using their products.

■ **Cabletron Systems, Inc. in Rochester, N.H., plans to integrate two vendors' performance monitoring software with its Spectrum network management platform. Meanwhile, Cabletron will sell those tools and support them through 1,000 field service representatives.**

In July, Cabletron will offer Network Health from Concord Communications, Inc. in Marlboro, Mass. The modular tool kit summarizes the performance of networks, servers and application traffic. In October, Cabletron will offer tools for analyzing and modeling the performance of applications that run across complex networks. The tools come from Optimal Networks Corp. in Palo Alto, Calif.

■ **Concord launched a support program that lets users buy a packaged performance-monitoring service instead of running Network Health reports themselves.**

Nine partners can provide reporting, consulting, training and maintenance from many field offices. They include Charter Systems, Inc. in West Newton, Mass.; Hi-Tech Connections, Inc. in Reading, Pa.; IntelliSys Technology Corp. in Fairfax, Va.; InterGlobe Networks, Inc. in Seattle; Paranet, Inc. in Houston; The Registry, Inc. in Newton, Mass.; RPM Consulting, Inc. in Columbia, Md.; and Tangent Professional Services in Burlingame, Calif.

■ **Hewlett-Packard Co. in Palo Alto, Calif., has teamed with integrator and performance-monitoring outsourcer International Network Services, Inc. (INS) in Sunnyvale, Calif.**

INS will adopt HP's NetMetrix LanProbes, high-performance units that gather data about network and application traffic. HP will sell the EnterprisePro monitoring service by INS. Both plan to collaborate on future service-level management products.

■ **Micromuse, Inc. in San Francisco announced a channel program seeking integrators, value-added resellers and consultants to support demand for its Netcool event-correlation software.**

— Patrick Dryden

Sold! Users give old mainframes second look

By Tim Ouellette

GOING, GOING, GONE!

The rapid pace of hardware improvements in the mainframe market has sites snapping up new machines almost as fast as they gobble PCs. And with the mainframe product cycle slashed from five years to barely one, older boxes may seem irrelevant.

But users aren't donating the old mainframes to schools or leaving them — with doors unhinged for safety — at curbside.

Instead, they are handing them back to vendors as part of upgrade deals. Afterward, many of these boxes are finding new life in shops looking to add capacity fast and at cut-rate prices. And users stuck in a long-term lease on an old machine have the option of subleasing deals.

For example, Group Health, Inc. sees the used mainframe market as a way to buy a new mainframe while someone else takes on the lease of its older system.

"One enticement for us to buy a new system is that IBM told us there were parties interested in subleasing the old machine for year 2000 testing purposes," said Art Louise, an assistant vice president at the New York company.

In fact, year 2000 work is a major need that's propping up the used mainframe market.

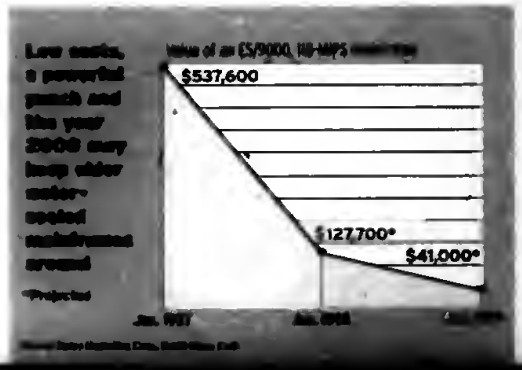
Users who need to ratchet up capacity fast to off-load their year 2000 testing applications can get older systems for as low as $1,000/MIPS, according to Meta Group, Inc. in Stamford, Conn. New CMOS mainframes cost about $10,000/MIPS.

"People haven't budgeted for year 2000 [updates], and they don't have the facilities to test it adequately," said Carl Greiner, a Meta Group analyst. After completing year 2000 testing, users can always throw the used machine back into production use, be added, because mainframe clustering is gaining momentum and makes it easy to use that extra capacity.

A small segment of data center managers agree. According to a recent survey of 200 information systems managers by Soundview Financial Group, Inc. in Stamford, Conn., 21% of mainframe sites said they would spend a larger percentage of their budget on used equipment this year than in the previous year.

Beyond the need for year 2000 testing platforms is an interest in used CMOS machines from the first runs of the product line, as opposed to the water-cooled giants of old.

IBM, Hitachi Data Systems, Inc. and Amdahl Corp. will ship in the next nine months CMOS systems that equal or beat the power of the traditional water-cooled systems [CW, May 26].



"I used to love scavenging and picking up good deals on the used market," said Dan Kaberon, parallel sysplex manager at Hewitt Associates, Inc. in Lincolnshire, Ill. "But now, with parallel sysplex, it is a good time for us to focus on the newer CMOS systems and capabilities."

"Values are very attractive [for IBM's high-end H5 water-cooled systems]," said Susan Middleton, an analyst at International Data Corp. in Framingham, Mass. (see chart). "But though there is some demand [for water-cooled systems], I wouldn't say it is robust."

For example, Hewitt instead brought in two older used CMOS systems at a low price, upgraded to the G3 IBM CMOS processor and saved money over buying the latest G4 CMOS systems outright.

"It is fine to run these older systems because inside they are now no different than the new boxes," Kaberon said. The human resources outsourcing firm is now an all-CMOS shop, he said. □

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The big boys target middleware market

▸ *IBM, Microsoft entries offer users choice among established vendors, cost savings*

By Tim Ouellette

SOME MAJOR PLAYERS are muscling their way into the middle of a growing market that is expected to reap up to $1 billion in sales by 2000.

The middleware market centers around software that in its various forms masks the complexity of moving data securely among different applications.

The push by companies such as IBM and Microsoft Corp. into this long-dormant area means users now have trusted vendors to choose from when deciding how to develop their application infrastructure.

That will be especially important as the Internet becomes the conduit for that data.

MIDDLE OF THE PACK

Vendors are right where they want to be – in the middle of the growing middleware market:

Vendor	Middleware offerings
IBM	MQSeries
BEA	Tuxedo, DECMessageQ and Object Broker
Tibico	Publish/subscribe middleware
Microsoft	MSMQ, Windows NT middleware
Level8	Falcon gateway between MSMQ and MQSeries
Candle and Boole & Babbage	MQSeries management and security tools

NEFTY SAVINGS

For example, users could stand to save up to $1.2 million on a $2 million development project by using commercial middleware, according to estimates by The Standish Group International, Inc. in Dennis, Mass. Middleware lets businesses avoid hiring programmers to write and maintain complex and custom infrastructure code.

As a result, "the demand for interapplication integration is skyrocketing," said Ezra Gotthiel, a senior analyst at Hurwitz Group, Inc. in Newton, Mass.

IBM sparked the surging interest in middleware with the company's MQSeries, asynchronous messaging that moves data among applications via message queues. The queues hold the data until the receiving application is available.

Microsoft is expected to ship a similar product this year, though its MSMQ will work only with Windows NT networks and applications.

That's where the add-on vendors come into play.

Level8 Systems, Inc. in New York has created software called the Falcon Gateway that bridges the two products.

MQSeries covers most conceivable platforms but is really basic plumbing that needs high-level management, analysts said. So systems management giants Boole & Babbage, Inc. in Sao Jose, Calif., and Candle Corp. in Santa Monica, Calif., have stepped in to make this possible with management and security add-on tools [CW, June 23].

In fact, Candle claims it now has more MQSeries engineers and consultants than IBM, which develops and sells the product.

SAFE FOOTING

And now that users are trying to do more business across the Internet, middleware that has been proved in legacy applications is seen as a way to ensure that business gets conducted securely.

"Just bolting a database to the Internet doesn't mean you have real business transactions," said Michael Carlin, vice president of products and strategies at Security First Technologies, an online banking company in Atlanta.

The firm uses Tuxedo, transaction-monitoring middleware from BEA Systems, Inc. in Sunnyvale, Calif., to monitor its Internet business applications. "Tuxedo has been there and done that already," Carlin said. □

LinkAge tools to ease Exchange migrations

By Barb Cole-Gomolski

TO MAKE IT easier for users to migrate to its Exchange messaging product, Microsoft Corp. last week acquired LinkAge Software, Inc., which specializes in electronic-mail gateways.

The 50-person Ottawa-based company sells software for passing messages and directory information between Exchange and several mail systems, including Lotus Development Corp.'s Notes and mainframe-based systems such as IBM's Office Vision.

LinkAge's tools let sites keep legacy mail systems up and running during a phased migration.

"This [acquisition] is a good move for Microsoft," said Bob Cavallaro, director of advanced technologies at American International Group, Inc., a New York insurance company that is deploying Exchange. "We've been asking Microsoft for more migration utilities."

MESSAGING SYSTEMS

HOMEGROWN

Prior to the acquisition, Microsoft sold products for migrating from its Microsoft Mail system as well as Lotus' CC:Mail, Novell, Inc.'s GroupWise, X.400-based systems and Digital Equipment Corp.'s All-in-1.

"Hopefully, this acquisition will bring the long-awaited Notes connector into Exchange server," said Tom Richer, director of enterprise messaging services at Integrated Office Solutions, Inc., a consultancy in New York.

Richer pointed out, though, that a Notes connector wouldn't be enough to mitigate the Notes-to-Exchange migration issues. A company moving from Notes to Exchange also would need tools to convert Notes databases into Exchange public folders, such as those from The Mesa Group in Newton, Mass., according to Richer. "IT will still need to piece together different products for a seamless migration from Notes to Exchange," he said.

The LinkAge utilities also may make Microsoft more competitive at large accounts that are moving off IBM mainframe mail systems, analysts said. IBM offers tools to migrate from its mainframe mail to Notes, as well as a line of gateways to other mail systems that are sold through its SoftSwitch division.

"This really helps Microsoft compete with Notes on all levels," said Eric Brown, a senior analyst at Forrester Research, Inc. in Cambridge, Mass.

LARGE SITES

Brown added that the acquisition would help Microsoft better meet the needs of large sites, which typically run multiple mail systems. "In a large company, the idea of having a 100% homogeneous E-mail system is a fantasy," he said.

Financial terms of the deal weren't disclosed. Microsoft officials said LinkAge product development would be moved to its Redmond, Wash., headquarters, but the consulting division would remain in Ottawa. □

MERGER TALKS

AT&T needs to make another local call

By Kim Girard

LEFT ON THE DANCE FLOOR without a partner, AT&T Corp. now must move forward with an alternate plan to capture business on the lucrative local loop.

Merger talks between AT&T and regional Bell operating company SBC Communications, Inc. died before either side even admitted publicly that a deal was possible. Both companies are now left to fend for themselves in the local and long-distance markets.

> The $50B merger would have been the largest in corporate history.

"[AT&T's] stock is down because they haven't gone down the road with a strategy on the local loop," said Tom Calcagnini, a senior analyst at Gruntal & Co. in Beverly Hills, Calif.

SBC and AT&T reported an end to the talks June 25; supposedly there were disagreements about how to win federal approval of the merger and whether SBC would give AT&T a detailed plan for opening the Baby Bells' local phone monopolies.

If AT&T had merged with SBC, it would have had access to a large chunk of the local market controlled by Pacific Telesis, which is owned by SBC.

Rumors cropped up in May surrounding a possible $50 billion merger between the two firms — the largest in corporate history. Neither company confirmed the rumors. Speculation ended with a June 24 phone call from SBC chief Edward Whiteacre to AT&T, in which he called off the talks.

In recent weeks, analysts had scoffed at the merger's chances of regulatory approval, citing antitrust laws. The Federal Communications Commission called such a deal "unthinkable" under current laws, and FCC Chairman Reed Hundt criticized the possible deal. □

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(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep
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(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep
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Internet Products ☐ Yes ☐ No

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OPINION

W3 cheers The night the Supreme Court announced its landmark

decision upholding free speech on the Internet, Tim Berners-Lee and Dan Hillis were sitting in the muggy Virginia twilight outside Thomas Jefferson's home at Monticello.

It was a particularly apt setting in which to find these information-age pioneers, who are exactly the kind of people Jefferson would have invited over for dinner and conversation. Berners-Lee invented the World Wide Web, and Hillis, a co-founder of Thinking Machines, is now president of research and development at The Walt Disney Co. They were among 10 industry leaders honored at this year's *Computerworld*/Smithsonian "Monticello Memoirs" program.

Much of the talk that night revolved around the current and future state of the online world, now that the Supreme Court ruling assures the Internet the same free speech protection held by print media.

"When people ask if I'm horrified that the Web is used for selling things or for pornography, I say, 'Well, can you imagine inventing paper that couldn't be used for writing checks — but only for academic theses of great merit?' " said Berners-Lee, who directs the World Wide Web Consortium in Cambridge, Mass. "The essential thing is having one Web that is *the* universe of network-accessible information."

On the surface, this milestone ruling seems to have scant impact on the lives of corporate IS managers (see story, page 49). But the long-term effects will be profound as companies race toward the electronic commerce phase of the 'net with a significant hurdle removed.

"Just as we created the Internet to make it powerful," Berners-Lee said, "now we are deliberately changing it to make sure it addresses all the social issues [that] we feel are important."

Thomas Jefferson would have applauded that thought.

Maryfran Johnson, *Executive editor*
Internet: *maryfran_johnson@cw.com*

LETTERS

Vietnam metaphor was insensitive, senseless

It's a shame that your writer could not think of a more reasonable metaphor for his page one story ["Monitoring tools can swamp nets if left unchecked," CW, May 12] when describing client/server upgrading vs. replacement.

The Vietnam War is still a soft spot, especially when it comes to describing what happened to the Vietnamese people. The opening paragraph is a senseless piece of work. Do burning villages and computer upgrading really complement each other? I am amazed that the editor let this article go to print.

David Vargas
Waltham, Mass.
Airborne Ranger
173rd Airborne Brigade
Vietnam '67-'68

Ralph Nader's software notions draw mixed reactions

I found the opinion column by Ralph Nader and Todd Paglia ["Expanding 'shrinkwrap licenses' unfair to users ...," CW, May 19] very interesting. As a consumer of software products, I have always had trouble agreeing with the so-called license agreements. If a software program cannot be defined as a product, it can certainly be defined as a service. Either way, there should be some semblance of consumer protection for software purchases.

The fact that a software company cannot be held liable for a program (or in the future, a software object) that doesn't function according to stated specifications is ridiculous. This is just another sign that the computer industry is really still in its infancy.

Dan Star
Milwaukee

Ralph Nader is wrong about the software licenses. Software is licensed, not sold "as-is." It's impossible to test every possible execution path. Liability for defective software is what I believe to be Nader's true motive. Think about it: You could sue for lost productivity because you said it was the software's fault. How many times does software get blamed for *user* error? What would happen to our industry if all companies had to defend these lawsuits? Only the Microsofts would survive. Does Nader think that companies purposely put bugs in their software to generate technical support revenue? If we had to produce "Nader-proof" software, we would have neither the time nor the incentive to create the innovations we see today.

Stephen W. Gissendaner
Talladega, Ala.
sgis@hcontrols.com

Kudos for job well done

I receive a number of technical journals, but at the recent Networld/Interop '97 show, I picked up a copy of *Computerworld* and was quite impressed with what I saw. Although I currently consider *InfoWorld* and *PCWeek* to be my most useful sources of industry information, after reading *Computerworld*, I may have to alter that existing opinion.

Louis H. Garner
Principal engineer
Las Vegas

Boys' club article sounds like male bashing

Laura DiDio's column ["Boys' club on campus?" CW, May 19] smacks solidly of male-bashing fodder. DiDio tosses out statistics such as "... the freshman class at Carnegie-Mellon has 95 computer science majors, and only seven of them are women." Instead of picking one discipline, and examining a snapshot of it, I would be more curious to find out what the majority of women at Carnegie-Mellon *are* majoring in. Maybe they are exercising their right to choose their own path and aren't being impeded by the boys.

> Does lack of esteem opt women out of IS?

Regarding DiDio's premise that it may be a lack of self-esteem that causes women to opt out of IS, what about the men who first choose IS as a discipline, then become disenchanted and switch majors? It would be an interesting subject to pursue to find out why people, not genders, change their minds about IS as a career.

Bill Simon
Atlanta

Computerworld welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Maryfran Johnson, Executive Editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.

Network's down due to shelling

Sharon Machlis

There's nothing like a trip to Bosnia to put one's IT "problems" in perspective..

I went to Sarajevo last month to visit friends — computer professionals and students before the war, who survived years of shelling, sniper fire and hunger under siege.

Now they're trying to rebuild their lives and careers in the war-battered Bosnian capital.

My friend Samir was studying computer networking when the war erupted in 1992. His city soon was strangled in what was to become the longest siege in the history of modern warfare. But between his stints at the front lines and his endless search for food and water, Samir was determined to complete his degree.

Snipers regularly shot at students. Study time ended when the sun went down.

Snipers regularly shot at students going to or from class. Study time was cut short when the sun went down (no electricity). Samir's thesis project on FDDI was complicated because a book on the subject couldn't be found in all of Sarajevo.

Yet when he passed his last exam and successfully defended his thesis, Samir's only comment was that it had taken too long to graduate. The war was "no excuse," he said.

While the world moved on to Windows 95, Windows NT and the Internet, Sarajevo was essentially frozen in time. Many computers were destroyed or burned out; replacement parts quickly became scarce.

E-mail returned to the besieged city in 1993, when a used PC was set up to handle messages. With regular telephone lines cut in and out of Sarajevo, the ZAMIR system moved mail by twice-daily satellite calls to Zurich (funded by a humanitarian organization, the Soros Foundation). More computer equipment was later smuggled through siege lines.

"We had a single [local] telephone line in the city and close to 500 users," recalls Hazim Kazic at the Soros office in Sarajevo. "Often it took hours of dialing in." When power was cut, ZAMIR went down, too.

There was more downtime when the building was struck by artillery fire.

Today — as in the U.S. — Sarajevo computer professionals have better job prospects than the average worker. But the compensation scale is quite different in a country where most prewar industry is idle and unemployment tops 50%.

Samir is an E-mail administrator at one of the international organizations that has set up shop in postwar Sarajevo. He earns about 1,500 German deutsche marks (about $900 U.S.) per month. That's a good salary for a Bosnian these days, but it wouldn't even cover the cost of a 133-MHz Pentium PC (1,778 marks in Sarajevo). And I've heard of government IT jobs that pay about 500 marks ($300 U.S.), which means you'd need more than three months' wages to buy a PC.

IS departments face special problems in postwar Sarajevo. One day early this year, Samir struggled to keep his network running as the power broke almost every hour.

Another problem is that there are few PCs in Sarajevo companies, which must find money for more before they can think of networks.

"But," Samir said confidently, "there is already an X.25 backbone up and running, and it seems that the Internet will come finally in an appropriate way."

There is currently one service provider. University TeleInformation Centre has to limit dial-in World Wide Web surfers to eight hours per month because its more than 800 users share just eight phone lines.

But in a city where residents couldn't even make an international phone call from home for almost five years, it's a start.□

Machlis is Computerworld's senior writer, security and government issues. Her Internet address is sharon_machlis@cw.com.

For best PC prices, look ahead

John Gantz

It's a fact of life that PC prices decline every year — from as little as 10% to as much as 40%, depending on the model. But it isn't a fact of life that corporate PC buyers always know how to make the most of that steady downward trend. I'm not sure they're always aware of their points of leverage over vendors.

For example, according to the PC pricing analysis here at International Data Corp., the introduction of Pentium MMX-based systems into corporate America in the first quarter of this year created spot price drops for older Pentium systems. That was because vendors that were early to market started a price war on older inventories. The price of Pentium 133s dropped 19% in the first quarter. Did you catch the wave? Next quarter, watch for price drops in Pentium 166s, because stocking levels are high, and even on Pentium 166MMX systems, which also have jumped in availability.

My point?

Careful buyers can time their PC purchases to coincide with price drops or stocking levels — based on model and configuration. If you're going to buy NT-class machines in the fourth quarter, for example, you should be thinking of ones based on 64M-byte memory modules. That's because prices for those modules will fall 20% or more between now and Christmas, whereas prices for smaller memory modules will remain stable. If you're buying general desktops, Pentium Pro prices will drop faster than Klamath prices — and the best deal will still be for Pentium 133s, 150s and 166s, all of which will drop in price 15% to 20% between now and the end of the year, making for year-to-year price declines of more than 40%.

So market timing — mostly an exercise in understanding component price trends and product gluts — is one way to profit from vendor product cycles.

Another is to understand their competitive hot buttons. The big battle now is between PC suppliers that sell through channels, such as Compaq and IBM, and those that sell direct, such as Dell and Gateway. Compaq, HP and others cut prices dramatically this year not because their costs got lower but because they wanted their prices within a few percentage points of the direct sellers'. Threaten to buy direct, and I bet you'll be able to get a good deal from your reseller.

Time your purchases of PCs with price drops and stocking levels.

The funny thing about PC prices is that, given the Intel technology road map and the general knowledge and forecast for component prices and demand, they aren't impossible to forecast. But price changes will vary by configuration and model, so you have to apply some science to the process. Just the algorithms for comparing models from different vendors with slightly different configurations are a matter of intense discussion among the vendors' competitive pricing analysts.

Why should you care? Why not just buy the cheapest product from your preferred vendor? Mainly because you're probably buying to support a certain application load or environment, and minor adjustments in configurations can mean big cost savings. In addition, if you are buying under lease terms or open-ended contracts, you'll want to ensure that you have some kind of step-down clause in the price schedule. You don't want to be paying 1997 prices for a 1997 model bought in 1998.□

Gantz is senior vice president at International Data Corp. in Framingham, Mass. His Internet address is jgantz@idcresearch.com.

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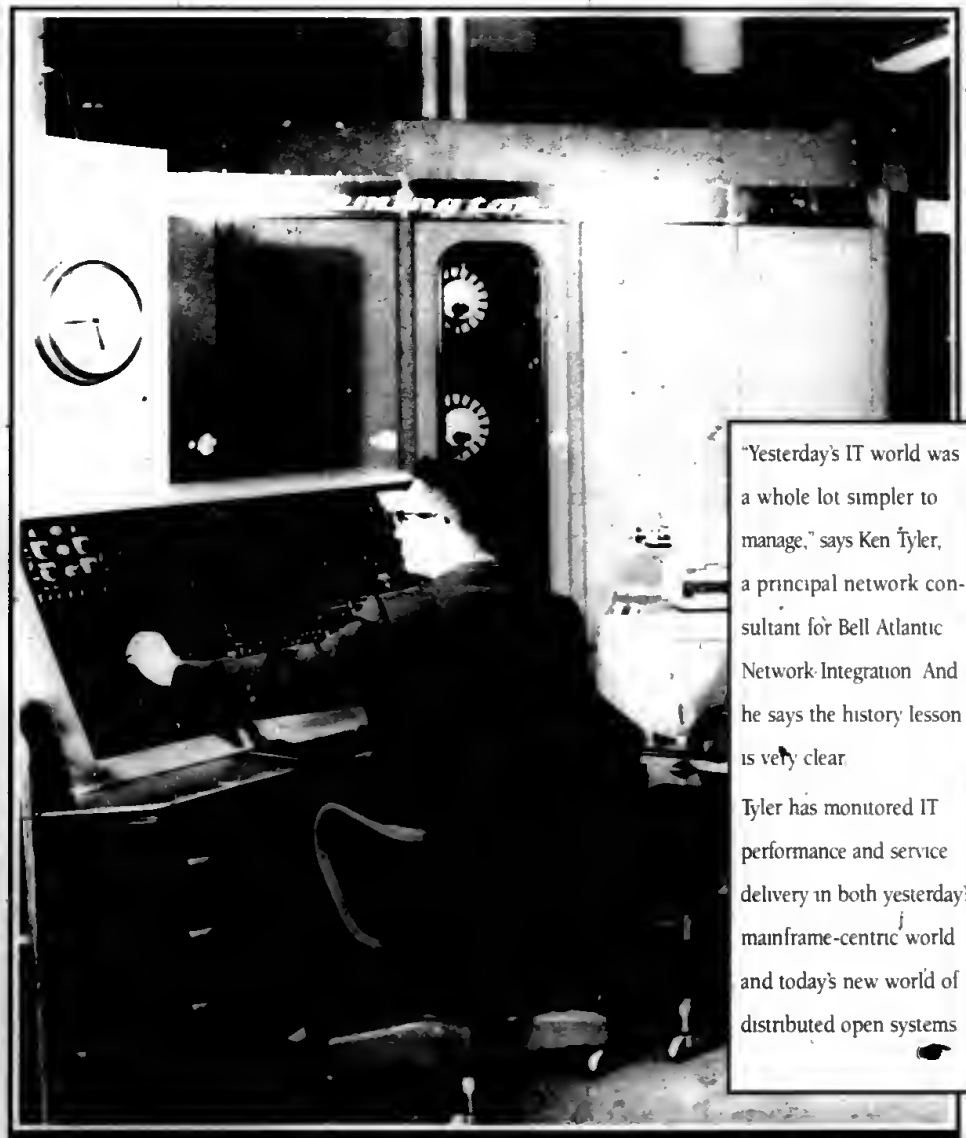

"Yesterday's IT world was a whole lot simpler to manage," says Ken Tyler, a principal network consultant for Bell Atlantic Network Integration. And he says the history lesson is very clear.

Tyler has monitored IT performance and service delivery in both yesterday's mainframe-centric world and today's new world of distributed open systems

From SAS Institute Inc

continued from page 1

The corporate "system" of yesterday was largely gathered under one roof, so the data collection to monitor performance and service delivery was fairly manageable. Today's distributed, enterprise system—on the other hand—is spread out in thousands of devices all over the world.

IT budgets used to grow by double digits annually, and skilled technical professionals were plentiful. Today's IT budgets are under phenomenal scrutiny, while IT job openings go begging for candidates. How can you manage these increasingly vast IT resources and plan for the future in the face of today's budgetary and labor realities? Perhaps the greatest difference between yesterday's world and today's is the very nature of the IT professional's mission.

Service Delivery: The New IT Performance Benchmark

In the past, the IT goal was to push applications out to the clients and to gather and process as much data as possible. Today, IT success is measured by *service delivery*. The critical questions have become, "Is IT delivering the services and information our business needs to compete in today's markets and to enable new business growth for tomorrow? Will the corporate network be able to support the applications our business will need to sustain growth?"

Unfortunately, the lament heard all too often from business executives is, "So much data, so little information." Why is getting usable information so difficult?

For one thing, IT systems planning has to start with the right premises, and that means an analysis of the business problem that needs solving. Instead, some planners start with a pure technology premise such as, "We want to build a multi-terabyte database." That's called technology for technology's sake, and in today's world it just won't cut it.

Wanted: A Single View of Data

Another factor that's helped create this data-rich, information-poor situation is that point solutions have often been developed without regard for how those solutions will fit into a greater enterprise information system. How can your company achieve that "single view of data by any user, any place" without a unified set of tools?

The very nature of today's enterprise information system has made data collection and analysis on service levels very tricky at best, a nightmare at worst. The system of today is a multiplatform, multivendor, multidevice stew pot. The sheer volumes of data gathered from this myriad of devices and platforms has scuttled many an IT effort to analyze performance and service delivery. What has been lacking is an integrated service management process to turn that data into usable information and to then use that information to make wise business decisions.

Finally, that integrated management process has arrived. It is called IT Service Vision™ and it comes from SAS Institute.

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Building a Bridge Between IT and Intern – Through IT Service Vision

What is IT Service Vision software?

It is an integrated software solution for managing the enterprise information system and for redirecting the efforts of the IT department toward service delivery. IT Service Vision provides the tools to manage the system and to anticipate changes that will be necessary to support future applications. This is accomplished by providing IT planners with accurate and timely information on any aspect of IT performance, such as the data or voice network, Web access, strategic applications, help desk – basically *any* IT service.

How is this done?

The facilities and tools within IT Service Vision yield a process allowing you to access any data from any IT service process, scrub the data and organize or warehouse it, according to how it will be used, and then exploit that data for management information or for business intelligence. IT Service Vision is unique in the huge volumes of IT performance data it lets you analyze and then quickly and flexibly report upon. With it, you can produce reports from a single user interface, all with a single software solution.

So this allows for more proactive decision making?

Absolutely. For example, while there are tools that allow network planners to monitor the behavior of LANs, IT Service Vision can show you changes in that behavior from day to day, week to week or month to month. Comparing such differences over time means that planners can better forecast and budget for network expansion, rather than discovering a problem only when network performance starts to degrade. It also lets them answer questions such as, "Which telecom service provider offers the best rates for our current and future usage patterns?" The bottom line is that IT Service Vision brings IT goals right in line with business objectives by giving access to usable information when it's needed.

For whom is IT Service Vision intended?

It is designed for use by a broad spectrum of IT professionals, including the CIO for high-level assessments of IT services needed, IT management for making sense out of the mountains of performance data collected daily from across the enterprise, capacity planners for accurately forecasting hardware and software needs, and network administrators who are burdened by the ever-growing needs for additional bandwidth.

What are the primary strengths of IT Service Vision?

One strength is the software's ability to summarize huge volumes of data very efficiently, from a space consideration. While some tools can yield daily information on system performance, up until now it's taken a combination of non-integrated tools and considerable manual effort to generate historical information.

IT Service Vision makes this critical process automatic, with little or no human intervention. This is essential in today's environment of tight IT budgets and shortages of skilled professionals.

Need for IT Service Delivery Fueled by Mounting Business Demands

There is little question in Rick Barhydt's mind where demand for IT service delivery originates.

"It's coming straight from the business side," says Barhydt, a systems administrator at Blue Cross Blue Shield of Oregon. "These days we are deploying a lot of new technology, but at times it breaks down or is not very responsive. We need reliable statistics for service-level analysis. In the open systems world, these [statistics] have been hard to get."

Multiplatform Magic

At present, Blue Cross is rolling performance data into a SAS-powered database as the first step toward more robust analysis and reporting with other SAS software tools. "We can run SAS software on mainframes, UNIX® boxes or PCs and it's pretty much the same solid product, regardless of the platform," Barhydt explains. "It's got great cross-platform compatibility."

The Oregon insurer runs about 60 production servers, with about 80% made up by several models of Sun Microsystems, Inc.'s SPARC servers.

Forging the IT/Business Link

Across the country in Frazer, Pa., Bell Atlantic Network Integration (BANI) has a dual purpose for its performance management efforts. First, the network design and management company needs to forecast its growth needs to meet internal budgeting and planning requirements. Second, BANI takes what it learns from its own service delivery monitoring and resells that knowledge to its customers, for whom BANI designs, maintains and even operates enterprise networks.

"That's about as tight a link between IT and the business as you can get," reports Ken Tyler, BANI's principal network consultant. "BANI generates new business because we can offer new services. One major service is our ability, using SAS software, to collect information from a ton of different devices, like hubs, routers, file servers, UNIX servers, NT servers—you name it."

Among the hardware in BANI's operations is Sun's UltraSPARC servers running Sun's Solaris 2.5 operating system.

The combination of SAS software on the Sun platforms "has been just great," reports Tyler.

"You can buy other packages and tools that will take network management information and produce charts, but in *their* format," says Tyler. "With SAS software, we can customize the information to the *nth* degree. We build things, put them into production, and they just run, and run very well." Tyler is particularly interested in the kinds of Web capabilities offered by SAS Institute's IT Service Vision.

Find out more about IT Service Vision at www.sas.com/vision/itservice

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COMMENTARY

Erasing the PC/system boundary

DAVID MOSCHELLA

COMPAQ IS BUYING Tandem. Gateway is entering the server business by acquiring Advanced Logic Research (ALR). Meanwhile, former Novell chief, Joe Marengi, has joined Dell to beef up its corporate account support. The three leading independent PC vendors clearly have the enterprise on their minds. But why?

Partly it's money. With the home market sagging, enterprise PCs and servers are clearly where the action is. But the real reasons run much deeper and are more grounded in technology and customers. It all starts with Intel.

Today's microprocessors can be used in everything from handheld computers to mainframes. Flushed with their huge success, today's PC giants suddenly face an ever-widening spectrum of intriguing opportunities: handhelds, laptops, desktops, network computers, NetPCs, PC/TVs, workstations, servers, multiprocessor servers, clustered servers, even parallel processors. Which businesses should they enter, and perhaps more important, which should they ignore?

In addition to the technological imperative, customers also are driving the expansion. Recent *Computerworld* research reveals that roughly 75% of all U.S. corporations lean toward buying their PCs and servers from the same vendor. For desktops and notebooks, the figure is 60%. Given those numbers, PC vendors have little choice but to adopt a broad-based enterprise product strategy.

Compaq has chosen to do it in a surprisingly high-end way. It isn't clear to me how Tandem's focus on high-performance, high-availability, transaction processing systems fits with Compaq's current need to service huge volumes of relatively low-end corporate servers. Also, because most of Tandem's business consists of proprietary non-Intel, non-NT systems, Compaq is picking up the sort of legacy baggage many of its competitors wish they could get rid of. At best, this looks like a long-term, NT-as-mainframe bet.

In contrast, Gateway and Dell are taking a more evolutionary approach. Gateway has never been eager to enter the complex server business, but with its increasing interest in the corporate PC market, some sort of move was necessary. An inexpensive acquisition of ALR — an established, if somewhat obscure, player — makes sense. As for Dell, bringing Marengi on board reinforces the message that it's serious about sustaining its reputation for first-rate support.

Although it's hard to argue with the current enterprise emphasis, today's PC leaders risk losing the very things that have made them so successful — speed, focus and efficiency. The inevitable bureaucracy and overhead of the systems business could leave them vulnerable to a new generation of focused, low-end rivals, perhaps even the renewed PC efforts from Japan.

More likely, however, today's PC leaders will turn the server business into the sort of competitive dogfight in which only the highly efficient can survive.

When the technologies were different, the PC and systems businesses could support different vendors that played by different rules. But now that PC technology is becoming systems technology, the values of the PC industry soon will dominate the values of the systems industry as well. □

Moschella is senior vice president of research at Computerworld, Inc. His Internet address is david_moschella@cw.com.

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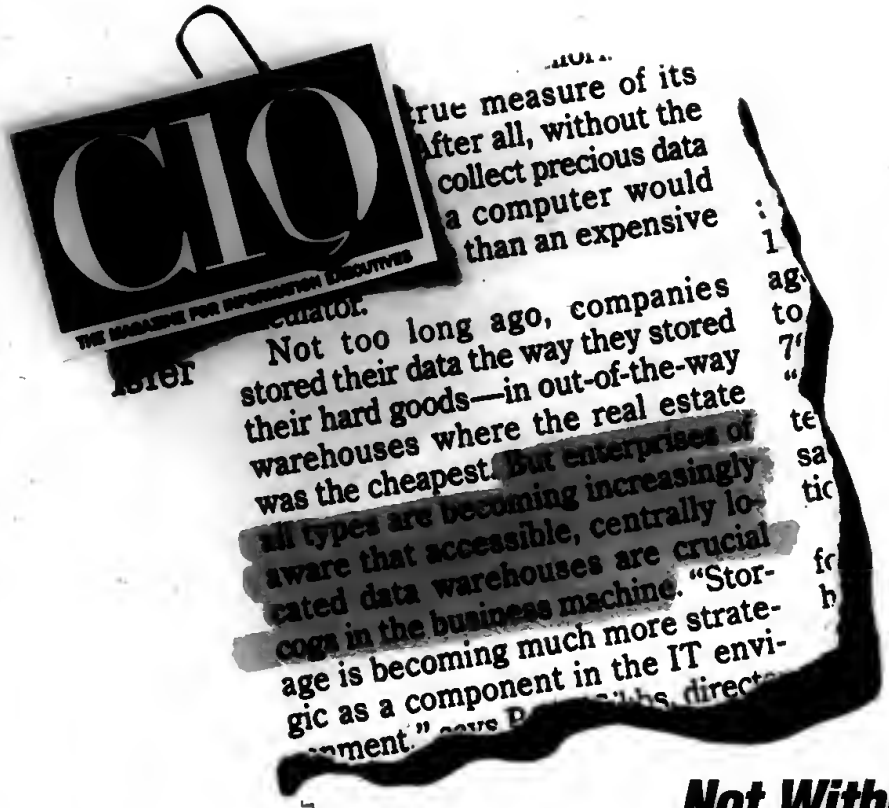

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Briefs

A SAMPLE OF NEW IS TITLES AND POSITIONS

IT/Business account manager – Acts as liaison between IS and business units

Process custodian – Manages re-engineered business processes

Data warehouse management scientist – Improves decision-making capabilities of a decision-support system

Information architect – Connects information requirements with technology investments

Base: 13,000 U.S. companies
Source: Hale Group, Inc., Stamford, Conn.

JACK SAMPSON

FedEx sends ... pros to lure talent

By Julia King

IS RECRUITMENT

THREE YEARS AGO, Federal Express Corp. recruiters first noticed it was taking longer to find and hire information systems workers with the right mix of client/server and other new technical skills.

Many young professionals also didn't like the idea of relocating to Memphis, home of the overnight carrier's corporate headquarters.

FedEx opted to attack the problem two ways. First, it relocated many of its new IS jobs to more desirable locations. Second, it began sending its IS staffers out on the road as recruiters.

"College grads didn't consider Memphis cosmopolitan. They wanted to head to cool places," recalled Julie Yancey, managing director of development services at the company's 5,000-person IS organization.

So FedEx began moving many of its new IS positions to Dallas, Colorado Springs and Orlando, Fla. Now, recruits have their choice of sites, which has proved to be a very attractive recruiting carrot.

First-person recruitment by another IS professional is the other key part of FedEx's strategy for winning IS employees.

A 3-year-old IS recruiting team now numbers 10 recruiters — all former IS staffers — whose full-time job is to bring in new technical talent. IS directors and managers also act as "ambassadors" to colleges of their choice, frequently their alma maters.

Their activities range from consulting on curriculum issues and presenting information management sessions on campus to providing case study material for computer science classes.

"It's great public relations for us," Yancey said.

FedEx, page 44

Competition fuels hospital net upgrade

By Kim Girard
NEW YORK

LIKE MANY large urban hospitals around the country, New York Hospital faces a squeeze that forces constant internal scrutiny.

With competition from Mount Sinai Hospital and other facilities, and pressures to cut patient care costs, New York Hospital officials knew they needed to shorten patients' hospital stays.

To help do so, the hospital developed a plan to upgrade its network and computer systems and build a $600 million addition. The changes will enable health workers to check in and diagnose patients faster, directly connect doctors to pharmacies through the computer system

Hospital, page 44

Guinness taps decision-support brew

▸ *System to help field sales reps track sales*

By Thomas Hoffman
STAMFORD, CONN.

JOHN STUMPF started shopping last year for a decision-support system (DSS) that would satisfy the needs of Guinness Import Co.'s 200 analysts/power users — salespeople and executives alike. But the chief information officer had a lot of trouble finding a one-size-fits-all system.

"There's nothing out there that allows you to go from power analysis to big-button, easy-to-use [executive information systems]," said Stumpf, a 14-year Guinness veteran.

FEW PACKAGES

Stumpf may be right. Industry consultants said there are few comprehensive DSS packages on the market, much less useful ones that end users can easily get their arms around. "A lot of these packages out there aren't designed for *any* end users," said Neal Raden, president of Archer Decision Sciences, Inc., a data warehouse/DSS consultancy in New York and Santa Barbara, Calif.

What Guinness wound up purchasing — to help all of its users track beer sales in the U.S. — was Platinum Technology, Inc.'s InfoAdvisor system. The client/server-based system, which Guinness began rolling out last December, was designed to provide a window into the brewer's 10G-byte Microsoft Corp. SQL Server-based data warehouse. It also supplies users with an easy-to-use for-

Guinness, page 44

THOMAS HOFFMAN

Corporate Strategies

Case Studies • Trends • Outsourcing

Briefs

PECO signs on IBM

PECO Energy Co. in Philadelphia outsourced the administrative portion of its human resources and payroll functions to IBM Global Services in Somers, N.Y. Under the 10-year agreement, IBM will provide benefits, payroll information and transaction support to PECO Energy employees.

Training software

Interactive Learning International Corp. in Troy, N.Y., announced a release of its interactive classroom software for training users over a LAN or WAN. New features in LearnLinc LAN/WAN 2.0 include an application-viewing function that lets geographically dispersed students view and interact with a software application launched by a teacher in a different location. Pricing for a 100-user server software license starts at $50,000. Per-user client software costs $500.

E-mail statements

Moore USA, Inc. announced it will add electronic-mail capability to its statement-printing business. Companies that use Moore USA to send out print statements in the mail to customers will be able to send those statements via E-mail instead. The service will be available in December.

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Guinness, page 44

Competition fuels hospital net upgrade

CONTINUED FROM PAGE 43

and use videoconferencing to let doctors at different sites consult over treatment.

Revamping the computer system began about two years ago, and a new clinical information system — which provides patient medical information — was phased in during the past year.

TRANSFERRING DATA

Howard Samborn, the hospital's director of telecommunications, also installed Asynchronous Transfer Mode (ATM) on the hospital's LAN to support new bandwidth-hungry software applications. A typical digital chest X ray that will be shared among staff, for example, is 10M bytes of data.

"You need to be able to transmit these studies to radiologists at a fairly fast clip," said Samborn, whose office is hidden in back of a basement maze of pipes and wiring. "To move those images around the network takes tremendous capacity."

The new system will enable the hospital's affiliates and geographically dispersed physicians to share all radiological images digitally instead of using space-hogging film, which must be marked and stored. Old film will be digitally converted and stored on the network.

In the past two months, nearly all patients were moved from the hospital's main building to the abutting new Greenberg Pavilion, an 11-story, 850,000-sq.-ft. addition built over the East River. The pavilion will house the hospital's patients in 776 beds and also features 19 operating rooms, adult and pediatric emergency rooms and an urgent care center. The old building will be used as office space and a teaching facility.

Overall, more than 1,000 desktops and bedside computers will be installed in the pavilion, each connected by 10M and 100M bit/sec. switched Ethernet to Cisco Systems, Inc. Catalyst 5000 switches. Each of the switches will have a 155M bit/sec. connection to an ATM backbone.

Half of the 776 beds for acute care patients will be equipped with Hewlett-Packard Co. monitoring equipment that will track vital signs and other patient conditions on a flat-panel, color-screen display.

Using the system, nurses at their stations can access information stored at a patient's bedside. There are plans to use interactive television so patients can order meals on the computer, which has information stored about their diet needs.

"It's nice to have all these toys, but we're leveraging them to provide big benefits," said Fred Macri, the hospital's vice president of general services.

PHARMACY ORDERS

The system will also speed up hospital pharmacy orders.

Doing things the old way, a doctor wrote up a drug order that was sent via fax to the pharmacy. Now, doctors electronically send orders to the pharmacy. The pharmacist sends a message to the nurse, who confirms the order on a PC. With the pharmacist's approval, the pills are then automatically dispensed through a drawer system. With the new system, prescriptions take minutes instead of hours, Samborn said.

Hospitals need such innovation to remain competitive in the age of managed care, said Barbara Kelly, a senior health care analyst at Datapro Information Services Group in Delran, N.Y.

"There's been a large initiative to update network infrastructure [throughout the industry]," she said. "It prepares hospitals to install clinical software that they need." □

New York Presbyterian Healthcare System

The new network lets doctors get prescriptions in minutes instead of hours

Guinness taps support

CONTINUED FROM PAGE 43

mat to get at sales data.

Stumpf declined to discuss the price of the system, but he described Guinness' investment as "reasonable" because the company already had existing hardware and the SQL Server environment in place. A spokesman for Oakbrook Terrace, Ill.-based Platinum said InfoAdvisor costs $90,000 for a 10-user license.

In the past, when an employee for the U.S. sales and marketing arm of U.K.-based Guinness PLC wanted to look at sales trends, one of the company's 10 IS staffers would have to yank data out of a stand-alone IBM RS/6000 transaction system and mount the information on a spreadsheet. That resulted in a lot of mistakes and took too much time — up to five hours — to generate a single report, Stumpf said.

Now, when Guinness financial comptroller Diane Goldman wants to examine growth trends in different regions, she clicks on InfoAdvisor to launch a query on her Windows PC. The response comes back within a few minutes, she said, "and cuts the data different ways" without requiring her to ask the company's IS group to generate a report for her.

The system, which runs on PCs and Digital Equipment Corp. Alpha Servers, is expected to help Guinness' 100 field sales representatives keep better track of sales once they are set up with remote Internet access later this year.

Guinness has been getting help installing the system from Concept Information Systems, a Stamford-based data mining consultancy run by Robert Cooke, a former liquor industry CIO. Having someone with the same vertical industry experience was key in helping Guinness work through regulatory requirements and pricing structures for its data warehouse, Stumpf said.

Guinness still has to work through some thorny training issues before its staff makes full use of the system. With a 10-person IS staff busy running core operations each day, the brewer will likely move toward a "superuser" approach in which highly skilled users in each department teach others how to use the DSS.

"There's constant pressure to do a lot with a minimum of head count," Stumpf said.

Still, company executives now say they are better positioned to compete in a market besieged by microbrewers and dominated by heavyweights such as Anheuser-Busch Cos. and Heineken N.V.

Among brewers, Guinness was ranked 11th in U.S. shipments last year and posted a 20% gain, according to Beer Marketer's "Insights" newsletter.

"Our growth has largely been achieved without much help from IT," said Stumpf, who expects InfoAdvisor to reduce each of its 100 salespeople's paperwork load by one day per month. "That's 1,200 days that can be devoted to selling instead of administrative work." □

FedEx sends pros to lure IS talent

CONTINUED FROM PAGE 43

FedEx has doubled its overall IS job acceptance rate, which is critical because it plans to expand by another 2,000 IS workers during the next three to five years.

Other large companies are following FedEx's lead, frequently dispatching senior IS executives and other top managers to campus recruiting fairs.

"I do it, and everybody who reports to me does some recruiting. I firmly believe that's something you don't delegate," said Charles Popper, vice president of corporate computer resources at Merck & Co. in Whitehouse Station, N.J.

At Dow Corning Co. in Midland, Mich., IS staffers who volunteer to go out to campuses receive training in how to recruit and interview IS job candidates. Each year, the IS department hires several college graduates, who subsequently serve on a New Employee Orientation Committee, which helps recruit the next crop of IS graduates the following year.

"It's almost looked on as kind of an honor to go back to your university and represent your company," said Don Hartz, the company's global human resources manager.

But not all IS staffers are cut out for recruiting. And training those who do venture onto college campuses is an absolute must, said Sam Marcus, a managing partner at Brecker & Merryman, Inc., a New York-based recruiting consulting firm.

"We encourage IS professionals to do recruiting because it brings instant credibility," Marcus said. But recruiters must be skilled in screening for business skills, such as communications abilities and orientation toward teaming, as well as technical skills. Recruiters also have to clearly communicate the link between technology and their company's business, he said.

"It's more than asking someone about Java, C++ and object-oriented [languages]. If they're out there just testing out for technical skills, that's not the whole job," Marcus said. □

The Internet

Electronic Commerce • The World Wide Web • Intranets

Briefs

[redacted]

Users say the most important issues facing the Internet today are:

Censorship	33.58%
Privacy	26.17%
Navigation	13.14%

Base: 19,970 respondents

Source: The WWW User Survey, Graphics, Visualization & Usability Center, College of Computing, Georgia Institute of Technology, Atlanta

Cryptography gets nod

[redacted]

Virus informant

[redacted]

Banks to ATM users: Eye see you

▸ *NCR tests iris scans to identify customers*

By Sharon Machlis

THE WORLD'S largest seller of automated teller machines (ATM) plans to use an eye-scanning identification system to replace conventional ATM cards in some systems by year's end.

The move by NCR Corp. in Dayton, Ohio, is one of the earliest attempts to commercialize such technology in the financial industry. It uses video cameras to scan a user's iris (the colored portion of the eye) and compare it with a previously stored digital image.

Iris scanning offers a high degree of accuracy without having to worry about lost or forgotten cards and personal identification numbers (PIN).

And it is relatively noninvasive. "You don't have the penal-code implications of a fingerprint," said George Kivel, group director of wholesale banking technology at The Tower Group, a banking consultancy in New-

NCR, page 49

Real-world uses for 3-D Web spec

By Mitch Wagner

THE INDEPENDENT DEALERS of Sea-Doos and Ski-Doos had no problem boarding the recreational vehicles and careening around on water or snow. But when it came to cyberspace, the dealers were scared.

Bombardier Corp. in Valcourt, Quebec, which makes the vehicles, had built an extranet for dealers to exchange repair information and financial data. But the network was little-used, largely because most of its 1,500 dealers in the U.S. and Canada were unsophisticated computer users.

CLOSER LOOK VRML

Bombardier turned to Chicago-based software developers Vream, Inc. to help its dealers become more comfortable with computers. Vream developed a custom video game for the company that uses Virtual Reality Modeling Language (VRML). In the game, the dealers would pilot virtual snowmobiles or personal watercraft through landscapes and seascapes, collecting points and learning features of the extranet as they went. The game was a hit, and extranet use jumped from 35% of dealers to 80%.

Bombardier is one of several companies that use VRML as a means to educate and entertain their users.

"VRML gave us a very realistic environment, with an immersive nature that was very compelling and fun," said Don Musick, project manager at Bombardier.

VRML is a specification supported by many vendors for drawing three-dimensional environments that users can walk or fly through, or for drawing objects that users can manipulate on-screen.

Real-world uses, page 49

Kids' Web sites must win over parents, too

REVIEW ▸ *Internet sites for children*

By Judith H. Bernstein

COMMERCIAL WEB SITES for children face a special challenge: How do you reach consumers whose attention span is vanishingly small, whose access to the Internet may be limited and whose parents will shut you out if you tick them off?

Charm the parent, win the child.

For example, advertisement banners that take a child to a site that allows online purchasing or ask for a name and address probably would be a big no-no for most parents.

Because America Online easily lets parents block youngsters' access to objectionable material and is a common cyberspace on-ramp for families, World Wide Web designers also must take that service's capabilities into consideration and ensure that their designs will work with AOL's browser.

And fancy multimedia applications might catch a child's

Kids' Web sites, page 48

	Disney.com	Sesame Street Centrals	Kids Space	Nickelodeon
WEB ADDRESS	[redacted]	[redacted]	www.kids-space.org	www.nick.com
CONTAINS ADS	Yes	No	No	Yes
MULTIMEDIA	Animation, Java games	Animation, Java games, music, video	Animation, music	Animation, Musical Instrument Digital Interface, VRML
LOW-BANDWIDTH VERSION AVAILABLE	No	No	No	Yes
VIEWABLE ON AOL	Yes	Yes	Yes	Yes
SPECIAL FEATURES	NetCrawler	News	Jump Menu	VRML games
OVERALL GRADE	B	C-	A+	B-

The Internet

Electronic Commerce • The World Wide Web • Intranets

Briefs

New Trojan horse

Files that are supposed to be useful software tools actually steal unsuspecting users' passwords, the National Computer Security Association and America Online warned AOL users recently. Dozens of so-called Trojan horse programs are billed as helpful add-ons to popular software programs. The files are keystroke-capture programs that grab password information and then send the data via electronic mail to anonymous remailers. A list of the file names — variations of the same type of attack — is at *www.ncsa.com/aoltrojan/*.

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Cryptoware gets nod

Netscape Communications Corp. and Microsoft Corp. last month won federal approval to sell strong encryption software to overseas banks. The move follows a pledge by the Clinton administration to allow the export of 128-bit encryption products for online financial transactions. Netscape's Communicator and Microsoft's Internet Explorer sold abroad will be able to access the 128-bit encryption only with the presence of a bank's special digital certificate.

Vines intranet

Banyan Systems, Inc. in Westboro, Mass., has announced Banyan Intranet Connect. The product lets those who use Vines and StreetTalk access files, printers and E-mail via a World Wide Web browser. Intranet Connect runs on a Web server and requires no additional client software. It is available now. It costs $4,995 for 25 concurrent users.

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Kids' Web sites must win over parents, too

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Kids' Web sites, page 48

	Bonus.com	Sesame Street Central	Kids' Space	Nickelodeon
WEB ADDRESS	www.bonus.com	www.ctw.org/sscentral	www.kids-space.org	www.nick.com
CONTAINS ADS	Yes	No	No	Yes
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LOW-BANDWIDTH VERSION AVAILABLE	No	No	No	Yes
VIEWABLE ON AOL	Yes	Yes	Yes	Yes
SPECIAL FEATURES	NetScooter	None	Jump Menu	VRML games
OVERALL GRADE	B	C-	A+	B-

there is a band of people who

live in your neighborhood.

They roam the streets.

And come into your businesses.

Some people claim they are prophets.

Others say they are maniacs

who have so many formulas

running through their heads

and scribble so many configurations

on the backs of envelopes and lunch receipts.

They advise.

Counsel.

They also deliver.

And then they come back.

They come back because

technology doesn't stop.

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REVIEW▶ *Internet sites for children*

Kids' sites must win over parents

CONTINUED FROM PAGE 45

eye, but not if he's using a hand-me-down computer with a 14.4K bit/sec. modem. The time it takes to download a graphically intense Web page is longer than a lot of kids will wait. And if the machine is old, they may not be able to see the site at all.

So smart Web designers must make sure those pages download quickly or offer a low-bandwidth version.

BONUS.COM

www.bonus.com

This self-described "protected environment for kids" launches a second browser that sends Netscape Communications Corp.'s Navigator to the background. The site's creators call this browser NetScooter. It replaces familiar Navigator buttons and menus with a handful of easy-to-understand, clickable icons so children can't get to your bookmarked sites. And although clicking the right mouse button can take you backward and forward within Bonus.com's site, that's as far as children can go.

Bonus.com's NetScooter replaces familiar Navigator buttons and menus with a handful of easy-to-understand, clickable icons

Icons next to each activity indicate appropriateness for age groups, ranging from "3 and up" to "10 and up." Access was quick enough to retain even a very young child's interest, and there is plenty to do. That includes shoot-em-up and Tetris-like games and links to kid-friendly sites, such as NASA's Mars Virtual Spacecraft and, every kid's fave, The Belch Page, complete with sound samples.

But I couldn't get the site to load at all from an AOL browser. Even though I used Version 3.0 of the service's software on a machine running Windows 95, Bonus.com said I appeared to be using Windows 3.x and needed to upgrade.

Some activities require registration, an option that may make some parents squeamish, although Bonus.com's creators promise confidentiality. The site also contains banner ads for a few sponsors.

SESAME STREET CENTRAL

www.ctw.org/ssentral

This site houses the online version of the pioneering preschoolers' show *Sesame Street*.

Sesame Street Central loads while playing the show's familiar theme music, but frustrations abound for little ones here. Downloading our first Java-enabled game — which popped up a separate window — took more than two minutes. This is an eternity for an impatient 3-year-old who is waiting to see Ernie or Cookie Monster. Although it did connect, the Java application was just as apt to crash Netscape as it was to work.

The games, once they are loaded, are cute and easy for a preschooler to navigate. For instance, a virtual puzzle lets youngsters practice eye/hand coordination and mouse skills by placing animals, bugs and plants into specific areas in a jungle scene.

An alphabet coloring area provides busy work for parents rather than an online activity for children; each of the 26 line drawings has to be printed out so that the children can color it. In the time you would need to access and print all these pictures, you could tote your kids out to the local five-and-dime for some real coloring books.

The site's creators said they are "building for the future" by offering resource-hungry features, including video clips of scenes from the show that are available via modem speeds of 28.8K bit/sec. and higher. Although the parents' part of the Children's Television Workshop site offers plenty of well-organized and useful information about the show and about child-rearing and development, your little one may be happier watching the show on TV.

KIDS' SPACE

www.kids-space.org

Kids' Space eschews slickness for a site that seems more homespun than many of the online offerings that target children, with places for children to chat and share artwork.

Its home page is long, but that's because it features pictures and words in large type. Despite the artwork and a feature the creators call a Jump Menu, access was quick. The Jump Menu pops up a smaller browser window as an easily accessible table of contents for the site, so no matter where you wander — even onto another site — you can get back.

Although kids' contributions and interaction is encouraged on the site, children are cautioned not to provide personal information to people they meet here. The creators also promise to screen each message for appropriateness before uploading it to the site.

The site's features allow youngsters ages 5 to 16 to participate in various activities: They can upload samples of music they have performed or send drawings to be displayed in a virtual gallery.

Although the more technically challenging areas of the site weren't available via AOL, there are still plenty of places for children to interact. They can look for online pen pals in mailboxes grouped by age, post messages to the site's bulletin board and check out kid-friendly Web sites. Moving about the site was speedy, even with a 14.4K bit/sec. modem.

Kids' Space originally was the personal home page of a doctoral candidate at Teachers College of Columbia University in New York that was hosted by Interport Communications. She is still involved with the site, but she has help from a group of volunteers.

NICKELODEON

www.nick.com

The attitudinal folks at Nickelodeon have transported their audacity online, with a multimedia-rich site that features Green Slime, Gak and Virtual Reality Modeling Language. But they haven't forgotten the little people. Of the sites we examined, Nickelodeon's was the only one that offered a low-bandwidth version for kids with PCs packing 14.4K bit/sec. or slower modems or browsers older than Navigator 2.0.

Kids' Space offers places for children to chat and share artwork and has an easily accessible table of contents

And even this low-bandwidth version features animated icons and billboard notices about the site's features that drop down to demand visitors' attention but don't try their patience with slow download times. The site was visible on AOL's browser, but Nickelodeon has its own area on America Online anyway.

The site, which is aimed at kids ages 6 to 14, doesn't require registration, but youngsters are asked to sign in with a screen name, electronic-mail address and password to access activities. An online sweepstakes asks kids for some pretty specific information if they want to enter, including full name, E-mail address, street address and asks if the child has pets and what their favorite leisure time activities are.

Sections include activities such as creating your own webzine or comic, information on the cable stations' shows, and games, with trivia questions and a three-dimensional interactive environment.

But kids are more likely to spend time rebooting their computers or relaunching their browsers than playing the games on Nickelodeon's play space; the site's multimedia applications tend to crash often. □

Sesame Street Central is accessible only with a high-performance PC

CDA ruling may have little impact on corporate IS heads

By Patrick Thibodeau

FOR MANY information systems managers, the Supreme Court's landmark ruling on the Communications Decency Act (CDA) probably won't change a thing. Sexual harassment laws, concern about use of employee time online and corporate image are more important factors that shape workplace and institutional policies, said analysts and users.

Sporting goods apparel maker Asics Tiger Corp. in Fountain Valley, Calif., for example, uses software to track employees' Internet use and blocks access to sexual content. "The users probably behave themselves a little bit more knowing that the system is there and tracking them," said Mark Allen, operations manager at Asics.

The Supreme Court decision, which upheld a lower court ruling striking down the CDA as unconstitutional, won't have any impact on Asics, Allen said. "I guess because we already have a fairly good policy in effect," he said.

Indeed, the ruling will probably have little effect on corporate America, said Larry Dietz, vice president of Zona Research, Inc. in Redwood City, Calif. "Businesses still have to deal with the issues of good taste and supporting the image and the reputation of the companies that they represent," he said. The ruling won't change sexual harassment laws; an offensive image, whether in the form of a paper pinup tacked to a bulletin board or screen saver on a co-worker's PC, could still create liability for the company, Dietz said.

"Businesses still have to deal with the issues of good taste and supporting the image and the reputation of the companies that they represent."

– Larry Dietz, Zona Research

The CDA attempted to regulate "indecency" on the Internet in much the same way that sexually explicit content is dealt with on broadcast television. Its creators said the goal was to protect children, but opponents argued that parents and school systems could do a better job of screening objectionable material and that the law would impinge on the free-speech rights of adults.

Brad Johnson, network systems coordinator at the Franklin Pierce School District in Tacoma, Wash., works to keep objectionable content from his 6,800 potential student users. The school district has installed SurfWatch Pro-Server software on its proxy servers in his wide-area network.

Johnson said the software, provided by a subsidiary of Spyglass, Inc. in Naperville, Ill., and the system do a good job overall, although students using search engines may occasionally bring up a string of profanities despite keyword blocks. "That is probably the only weakness that I've seen," he said.

The Supreme Court ruling, in effect, gives the Internet the same free speech protection held by print media such as newspapers. "It's very important that [Congress] remembers that the digital press are the real press and deserve all the protection of the First Amendment," said Brad Templeton, publisher and founder of ClariNet Communications, an online news service and one of the original plaintiffs in the case.

The ruling is good news for companies such as Playboy Enterprises, Inc., publishers of the magazine by the same name. Playboy's World Wide Web site gets about 4 million hits per month. Playboy supports voluntary efforts to restrict access and offers an electronic mailing list for parents that notifies them of any uniform resource locator changes so they can update blocking software, said spokeswoman Rebecca Theim. □

Real-world uses for 3-D Web spec

CONTINUED FROM PAGE 45

Proponents said VRML is easier for users to understand than the more conventional two-dimensional designs on the Internet. "As human beings, we're accustomed to building three-dimensional maps in our heads to let us find things very quickly," said John Dankowych, manager of marketing and new ventures for the information systems department at Nortel, Inc. in Brampton, Ontario. "VRML lets you leverage on that human mapping capability."

Nortel has used VRML to build a 3-D rendition of the corporate intranet that was designed to sell employees on using the intranet. The VRML servers and head-mounted displays for viewing the VRML world are at a walk-in training center — the Cybershop — that is run by the IS department. But even though VRML is gaining ground, users said the technology is being held back by standards battles among vendors; relatively high bandwidth requirements; and the high-end hardware needed to effectively run VRML programs.

And although 3-D worlds can be intuitive in theory, they are also confusing to navigate in practice.

Standards differences among VRML vendors are slowly evolving and converging. The VRML Architecture Group early last year adopted VRML 2.0 as a standard, which includes support for Java extensions and sound in VRML. Most important, supporters said, VRML 2.0 lets VRML objects move around and change shape.

Still, the standards problems aren't entirely solved. Microsoft Corp. and Netscape Communications Corp. each have added proprietary extensions to VRML that keep their browsers from being 100% compatible, as have about a dozen other VRML vendors. And Apple Computer, Inc. in Cupertino, Calif. — a major player in online graphics because most graphic designers still use Macintoshes — didn't endorse VRML until last year.

Bandwidth also is a problem for VRML. VRML files start at a few tens of kilobytes, and several-hundred-kilobyte files aren't uncommon. They take many minutes to download over a dial-up Internet connection.

Hardware requirements often are expensive. For example, the Sea-Doo and Ski-Doo applications cost a total of $125,000. Nortel's virtual world runs on a $25,000 PC workstation, and head-mounted displays for viewing the applications cost $12,000 each. VRML can run on far less — it can be displayed on off-the-shelf Pentium computers — but quality suffers.

And although human brains may be hardwired to interact with a 3-D real world, they have difficulty doing so using a computer screen.

"The interfaces are cute but terrible," said Mark Hardie, an analyst at Forrester Research, Inc. in Cambridge, Mass. "It's difficult to move around in a 3-D space using a mouse. You're sitting at your desk looking at a [two-dimensional] monitor, trying to figure out how to move around." □

COMPUTERWORLD

For these and other related links, point your browser at www.computerworld.com/links/vrml.html

- VRML Repository
  www.sdsc.edu/vrml
- What is virtual reality?
  www.cs.umd.edu/projects/gvu/vr/whatisvr.html
- VRML courses on the internet
  http://www.3dsite.com/vrml

New VRML tools

Online Environs, Inc. in Cambridge, Mass., is breaking new virtual ground with a data-visualization tool that uses VRML.

Where previous VRML applications have typically been "virtual worlds," entertainment-oriented sites and sales gimmicks, Online Environs is developing a tool set designed to extract data from any SQL database and graph the data in three dimensions using VRML. The application uses proprietary middleware that runs on Internet servers developed by Online Environs, a 15-person software shop. It conserves bandwidth by downloading data alone in real time to a Java client that runs in Netscape's Navigator or Communicator browser, which then generates VRML on the fly and displays the information inside the browser.

The Dynamic VRML Framework is still under development. Online Environs officials said they expect to decide this month whether to ship the software as a product or to build custom applications for individual users. "This kind of tool can be very intuitive," said VRML user Don Mosick, project manager at Bombardier. "You could glance over a landscape of data and see what's going on, locate hot spots in an instant. It's like being a pilot and flying using a two-dimensional contour map vs. seeing an actual mountain outside your window." — Mitch Wagner

NCR looks at eye-scan IDs

CONTINUED FROM PAGE 45

ton, Mass. But the industry still must determine whether customers are comfortable with such an identification method and whether it is worth the added cost. For now, iris recognition is primarily being studied in laboratories or pilot projects. "Fingerprints are probably getting more play right now," Kivel said.

NCR said it is testing the IrisIdent technology from Sensar, Inc. in Moorestown, N.J., and expects to have a commercial product by the fourth quarter.

The company wouldn't comment on how much more an IrisIdent system might cost compared with a conventional ATM. Kivel said the technology could add about $500 to a $20,000 full-feature machine.

"There's great potential with using the eye as a form of identification because it's so exact and unchanging," said John Hall, a spokesman at the American Bankers Association in Washington. "But there's a cost factor for most institutions at this time." Unless there is a drop in price for the technology or a rise in fraud, Hall said he doesn't expect iris identification to replace cards and PINs any time soon. □

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Briefs

Collaborative features to consider when selecting a groupware system

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2. Time management
3. Information sharing/conferencing
4. Meeting support
5. Workflow
6. Document/image management

Source: Patricia Seybold Group, Boston

Running with IntranetWare

▸ Sports apparel firm taps Novell tool for cost savings, accessibility

By Laura DiDio

WHEN ITS REVENUE soared from $100 million to $700 million in two years, Fila, Inc., a manufacturer of footware and sports apparel, knew it had to replace its outmoded network setup, which provided only localized PC connnectivity to a mid-range host.

The Rockville, Md., company's criteria for its new network setup included a network operating system with centralized management to link 1,300 users in multiple remote international and domestic sites. Fila also wanted a network operating system that provided it with the ability to support a wide range of client desktops.

"Fila is growing rapidly. We needed networking technology that would keep pace with our expanding needs. And IntranetWare fit the bill from a strategic standpoint," said John Eby, Fila's manager of personal computing. Fila also uses the Intra-

IntranetWare, page 54

Token Ring users may stay put

By Bob Wallace

WITH GIGABIT Token Ring products on the horizon, some users are reassessing the pros and cons of migrating from Token Ring LANs.

Until recently, there was no high-speed hope for Token Ring technology, which maxes out at 16M bit/sec. As a result, many users said they would eventually migrate to Ethernet, which offers 100M bit/sec. — and soon 1G bit/sec. — options. But that is changing [CW, June 30].

KEEP 'EM HOME

That development, coupled with some of the downsides associated with migrating to Ethernet, may keep many Token Ring users in the fold.

"We're not migrating to Ethernet because we'd be looking at a ton of money for new equipment, and just about the time you get it implemented, it'd be time to upgrade to the next highest-speed Ethernet [option]," said Gary Dahms, a senior communications analyst at Mortgage Guarantee Insurance Corp. in Milwaukee. "And it would burn staff resources. I'd need people to change cards and

Token Ring, page 54

MOVING FROM TOKEN RING TO ETHERNET

Pros

- Ethernet technology can be cheaper
- Has a better upgrade path
- Cards included free in most new PCs
- Hard to find new staff trained in Token Ring
- Supports speeds higher than current Token Ring

Cons

- Must change drivers and PC cards
- High cost of new Ethernet hubs and switches
- Staff cost for maintaining two technologies during migration
- Token Ring frames are larger than Ethernet frames, causing interoperability problems

WIRELESS LANS

IEEE standards welcome, but are they too late?

By Mindy Blodgett

LONG-AWAITED STANDARDS for wireless LANs, which some say will jump-start the market, have finally been approved. But technological advances may have already made the specifications obsolete.

The promise of wireless LANs has been to enable employees such as warehouse workers to roam on the job and still retain connections to the enterprise.

> The installed base of wireless LANs was only 572,000 last year

But high price, low speeds and lack of standards and interoperability among competing products has stymied growth.

AT LAST

But the recent decision by the Institute of Electrical and Electronics Engineers, Inc. (IEEE) to set the 802.11 specification should solve the interoperability problem. The spec governs how 1M and 2M bit/sec. wireless LAN products from different vendors work together

"Everybody is breathing a sigh of relief that the standard has finally been set," said Craig Mathias, an analyst at Farpoint Group, Inc. in Ashland, Mass. "The customers will now get the

Standards, page 54

Megasoft's Web Transporter can push files and software upgrades across an intranet and let users fetch what they want

Distribution tool adds push control

By Patrick Dryden

TAPPING AN INTRANET for software delivery beats duplicating and mailing disks to far-flung users, according to evaluators of a distribution tool from Megasoft Online, Inc. in Freehold, N.J.

A new version of the company's Web Transporter gives central information systems managers control over updating files and applications on remote clients. Instead of depending on each user to fetch software, IS can push files to users with the help of a Java agent.

"This version will save us having to create an E-mail message to tell them that a patch or fix is available, then wait for them to get it," said Tom Casey, project manager at New York Life Insurance Co. in New York.

Possibly 8,000 internal users and a few thousand more in field offices need a fast way to update their insurance software, Casey said, so he began testing Web Transporter. The enhancements, available this month, promise better automation, he said.

Distribution tool, page 55

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IntranetWare fills Fila's bill

CONTINUED FROM PAGE 51

netWare Client 32 for Windows 95 to give those users complete access to network resources.

Prior to its Novell IntranetWare rollout over the past six months, Fila had no enterprise network in place. The company used IBM's AS/400 machines with a proprietary software package for local PC connectivity. There were no wide-area links or electronic mail among domestic and international offices.

"IntranetWare saves us 20% in soft dollars — that is, we cut out several days of management tasks each month by simply being able to roll out software applications to all of our desktops and laptops via [Novell Directory Services]. Without IntranetWare and NDS, we'd have more people on planes, buses and trains. The alternative is [having users ship] equipment to [IS] to be configured, which is always fraught with peril," Eby said.

"There's a big difference in dealing with Novell today compared to two years ago."
– John Eby, Fila, Inc.

In hard-dollar savings, the IntranetWare implementation saves Fila from adding three network administrators in its larger U.S. locations compared with other platforms such as Windows NT Server or OS/2 Warp Server. "Network managers in large U.S. cities command at least $50K annually, so conservatively that's $150,000 in just salaries," Eby said.

And the single-user log-on of IntranetWare has reduced the number of calls to Fila's corporate help desk — which Eby also manages — by half, he said. "Eighty percent of our help desk calls are password- and ID-related, because people have had to do multiple log-ons, and they frequently forget their various passwords. IntranetWare only requires a single user log-on," he said.

Although Eby and Fila's Chief Information Officer John Lore had some concerns about Novell's long-term business outlook, the pluses outweighed the minuses.

"Windows NT Server is catching on fast, but it's still easier to recruit third-party resellers and vendors to support IntranetWare," Eby said. He admitted to some concern about the growing momentum of Windows NT Server among application developers and whether that will translate to fewer third-party software applications written for the Novell environment.

"I'm not in a panic about it, but we are watching the situation and will keep our options open," Eby said. Fila uses Windows NT Server to run its Oracle 7.2 database.

One unexpected but welcome result of Novell's recent underdog status compared with rival Windows NT Server is better service and support for Fila.

"There's a big difference in dealing with Novell today compared to two years ago. I've gotten better pricing, and during the design phase, Novell consultants came out to our offices and helped us every step of the way. And we now get answers to technical support questions within an hour or two instead of days," Eby said. □

FILA USES INTRANETWARE FOR:

- A single point of administration
- Interconnecting 1,300 users
- Linking eight international offices
- Reducing the number of network managers
- Giving Windows 95 desktop users access to all network resources
- Integrating ManageWise for integrated enterprise management

Standards may be too late

CONTINUED FROM PAGE 51

warm, fuzzy feeling they didn't previously have for wireless LANs. There should be more products and lower cost."

Wireless LANs are used to supplement in-building and on-campus communication and to link buildings where wired connections are difficult or prohibitively expensive.

But the standards, which have come several years after they were first expected, may already be old technology, Mathias said.

"I'd love to say that all the confusion is now gone because of the standards, but the technology is very fluid," Mathias said. "We now have 10M bit/sec. technology without standards. So it is not an ideal situation, but I think customers are nonetheless feeling more reassured."

INTEROPERABILITY

Users agreed that the standards agreement is a positive development but that it may be too little too late. They also said they wonder how well the products will interoperate.

"I think that, in general, standards are a good thing," said Richard Hoffman, lead application engineer at the American Red Cross in Falls Church, Va. "But it has taken so long, and in the meantime, technology has passed them by. This will be good for the vertical markets using 1M bit/sec. technology, but it won't do much for the more general applications that need more speed and bandwidth."

"It also remains to be seen how interoperable the products will actually be," Hoffman said.

The standards will provide interoperability at the physical layer between mobile clients and access points and will encompass three transmission options: one infrared option and two radio frequency (Direct Sequence Spread Spectrum and Frequency Hopping Spread Spectrum) options. □

Wireless LAN specifications

- Govern how 1M and 2M bit/sec. wireless LAN products from different vendors will work together
- Provide interoperability at the physical layer between mobile clients and access points
- Encompass three transmission options: one infrared option and two radio frequency (Direct Sequence Spread Spectrum and Frequency Hopping Spread Spectrum) options

Token Ring users may stay put

CONTINUED FROM PAGE 51

drivers, which means they're not doing what they're supposed to be doing — increasing performance on our Token Ring network."

Beyond saving on equipment purchases, drawn-out migrations tie up valuable staff resources. Users also have to reconcile Token Ring large frames with shorter Ethernet ones and port applications over to ensure optimal performance.

But one user, who lauds the recent work on faster Token Ring, is moving to Ethernet despite the cost.

"Some Token Ring shops find it cost-prohibitive to make the move," said Matt Kentucky, director of communication services at Household International in Prospect Heights, Ill.

"That's because you have to change PC cards, hubs and server cards for starters. That carries a big cost with it. [Nonetheless], we expect to complete the migration in 12 to 24 months," he said.

Switches that support Ethernet and Token Ring technologies offer users a less painful alternative to migrating to all Ethernet.

"We just slide a card that can support Ethernet users in to our Xylan switch while other cards support our existing Token Ring users," explained Barry Forgeng, a network manager at ELF Autochem, a chemicals giant in Philadelphia. "Mix and matching the technologies in one box provides optimal flexibility."

Forgeng identified one trend that has been a large factor in users' decisions to migrate from Token Ring.

"We already have 18,000 to 20,000 stations on Ethernet already, which puts us pretty far down the path."
– Fred Cory, First Union

"All the development for the past three years has been in Ethernet switching," he said. It can be disconcerting to see one technology race ahead, while the other moves at a far slower pace, he added.

For at least one user, renewed efforts to speed up Token Ring are too long in coming.

"It's too little too late," said Fred Cory, a consulting network systems engineer with First Union National Bank Corp. in Charlotte, N.C. "We already have 18,000 to 20,000 stations on Ethernet already, which puts us pretty far down the path."

But as is often the case, many shops keep some Token Ring users in place and simply connect new workers and sites with Ethernet technologies. "We're not doing anything with our installed Token Ring base," Cory said.

He calculated that he saves $400 per seat by using Ethernet switching instead of Token Ring. That's because most every new PC comes with a free, built-in Ethernet card, whereas Token Ring cards cost several hundred dollars.

"The cost [of going with Ethernet] can far outweigh the technical benefit of Ethernet, which is speed," Cory said.

Ray Peterson evaluated Ethernet technologies and decided to stay put for the next several years.

"We're going to give Token Ring technology a while to play out," said Peterson, network manager at Wisconsin Indianhead Technical College in Shell Lake, Wis. "It made more sense for us to stay with it. We'll certainly take a look at faster Token Ring." □

Distribution tool adds push control

CONTINUED FROM PAGE 51

"This version saves users time and the need to learn something new. Whenever they log in through their browser, they get notified about new files, so they can just start the process," said Casey, who is still evaluating the product.

Megasoft previously provided a Web Transporter server from which users could pull desired files. Lucent Technologies, Inc. in Murray Hill, N.J., offers a similar software distributor, called Terra-Nova Express.

Web Transporter 1.5 includes a Java agent to coordinate distribution tasks among clients, the central authentication server and local staging servers. These distributed servers can reduce traffic across an internal network by localizing file activity.

Web Transporter works with any World Wide Web server and any database through its support for open Internet and data handling standards, said Theresa Newcomb, executive vice president at CommScape Systems, Inc., a consulting firm in Colts Neck, N.J.

"This is not as costly and complex as a big management platform for software distribution, yet it provides the central control and tracking IS needs," Newcomb said.

Pricing for Web Transporter starts at $995 for departments or $35,000 for 1,000 users for the enterprise version.

Strategic management platforms encompass software distribution to internal users. But integrated suites may cost millions of dollars and take a year or more to implement.

Evaluators of Web Transporter at Dow Jones & Co. in New York faced a more urgent need — timely updates for 300 field technicians.

Mailing diskettes had been the only reliable way to send them new documentation, drivers and reference files, said Tom Palmisano, technical support supervisor at Dow Jones. Web Transporter looks more timely and efficient, although trials aren't complete, he said.

"Everyone will be able to get information at the same time, and we can track that they received the files and updated their system," Palmisano said. "We can get a better grip on what's happening in the field." □

NEW PRODUCT

SECURICOR 3NET, INC. has announced Secure IQ for Windows, a software-based encryption product for Windows 95 and Windows NT.

According to the Moorestown, N.J., company, the product lets companies transmit confidential material and sensitive data across the Internet, intranets or extranets. Several layers of security are provided, including automatic algorithm negotiation and cryptography using the 3Key Triple Digital Encryption Standard. Secure IQ also uses Diffie-Hellman public key management and can accommodate large key sizes up to 1,024 bits.

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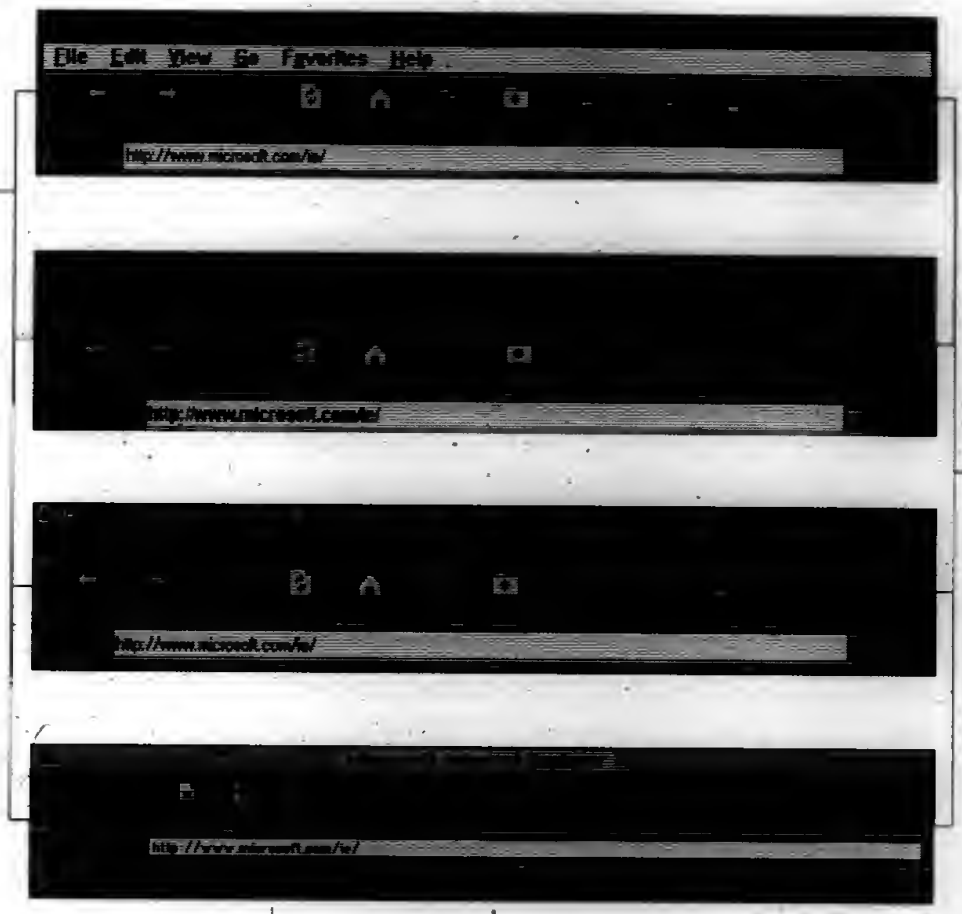

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Software

Databases • Development • Operating Systems

Briefs

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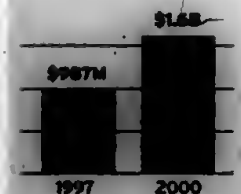
Projected spending for desktop administration products



Source: International Data Corp., Framingham, Mass.

Take the 8 train? Oracle users stall

App vendors must adjust to Oracle8

By Randy Weston

BUSINESS PROCESS application vendors are rushing to jump on the Oracle8 bandwagon, but it may be some time before the software systems are able to make full use of the database's new features.

So users may want to sit tight and wait for the hype to die down before evaluating what the new database will bring to their company.

"All the application vendors would love to take advantage of all these [Oracle8] features, [but] they will have to write more code to take advantage of the specific databases," said Adam Thier, an analyst at Meta Group, Inc. in Stamford, Conn.

Enhancements in Oracle Corp.'s new database server in-

App vendors, page 62

Oracle8 release may not spur upgrades

By Craig Stedman

THE ORACLE8 era has finally arrived. But don't look for a stampede of Oracle Corp. users rushing to get in step with the times.

The long-promised version of Oracle's database became available late last month with a variety of new features that are supposed to lower operating costs and boost application performance and scalability. All that appeals to users, especially those with large databases that can choke throughput.

But even some of the showcase beta testers who took part in Oracle8's June 24 launch in New York said they haven't made firm plans for upgrading their Oracle7 applications. Several indicated they may not move to Oracle8 for six to 12 months because of a mix of training needs, internal scheduling issues, product maturity concerns and hesitance about tinkering with working applications.

For example, Merck & Co. in Rahway, N.J., may wait for a second release of Oracle8 that is planned for next year before upgrading a decision-support application used by its 30-plus manufacturing plants.

"We kind of want to have a look at the big picture before just throwing Oracle8 in," said Samuel Strum, a senior systems associate at Merck's automation and information technology group. "When it's a brand-new product, you've got to be careful. And we're able to survive right now with Oracle7."

Merck's initial testing of Oracle8 turned up some data replication glitches under Windows NT, Strum said. Once Ora-

Oracle8, page 62

Web-enabled systems will ease document access

By Barb Cole-Gomolski

USERS EXPECT the growing crop of Web-enabled document management systems to make it easier and less costly to deliver document-driven applications to a wider audience.

Most of the leading document management vendors have announced plans to let users tap in to their systems with World Wide Web browsers. That could result in corporate sites giving all users Web access to company documents while continuing to provide select workgroups with more specialized document applications, analysts said.

For companies such as Dow Chemical Co. in Midland, Mich., which has deployed document management to several thousand users, browser clients

Dow's Jack Robinson

Browser clients will reduce software and training costs

will reduce software and training costs, according to Jack Robinson, data architect at Dow Chemical.

"A [specialized] document management client is a couple hundred bucks, and then there's the training," he said.

The chemical giant is testing a browser-based version of its system, which is from Pleasan-

Document management, page 62

HP tools graft benefits of NT on Unix investments

By Jaikumar Vijayan

HEWLETT-PACKARD CO. has started delivering on its promise to give companies new software tools to integrate Windows NT with HP Unix environments and protect their investments in older systems.

The Palo Alto, Calif.-based vendor last month introduced development tools that allow software developers to write applications for Unix and Windows NT platforms from one development environment. Specifically, HP's SoftBench OpenStudio architecture enables developers to create C++ applications for Windows-based clients and HP-UX servers.

"This gives Unix developers the ability to write applications on Windows NT workstations and move that software to Unix environments," said Judith Hurwitz, president of Hurwitz Group, Inc. in Boston. Instead

HP tools, page 62

HP's SoftBench OpenStudio

- Visual C++ applications for Windows-based clients and HP-UX servers can be written in a single development environment
- Simultaneous debugging [illegible] on HP-UX and [illegible]
- [illegible] developers [illegible] existing HP-[illegible]

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NEC

Oracle8 released

CONTINUED FROM PAGE 59

cle shakes out the bugs, he said, Oracle8 should eliminate the need to manually replicate corporate data to decision-support databases at Merck's plants. The pharmaceutical maker also wants to use Oracle8's object capabilities to model business processes in real-world terms.

Analysts expect similar take-it-easy upgrade strategies from most users instead of a fast switch to Oracle8, which has been in beta testing since last August and was first discussed by Oracle executives in 1992.

There is no reason to shun Oracle8 for brand-new applications, said Wayne Eckerson, an analyst at Patricia Seybold Group in Boston. But he said many Oracle shops just recently installed the year-old Oracle7.3 and probably won't want to go through the pain and cost of another upgrade right away "unless they absolutely need the functionality that's in Oracle8."

Hugh Allan, manager of information technology at Dunlop Tire Co. in Amherst, N.Y., said Oracle's promise to release its packaged applications for Oracle8 almost immediately may accelerate his database upgrade plans (see story below).

But even so, it will likely be next summer before existing applications get the Oracle8 treatment, Allan said. Dunlop's first priority is to finish two new applications: an order-entry system that was too far along to wait for Oracle8 and an extranet for sharing information with its dealers.

"We just have a lot of other projects that we're working on right now," Allan said. Eventually, Dunlop wants to take advantage of performance-boosting Oracle8 features such as database partitioning. But waiting until mid-1998 "will give us plenty of time to prepare and get training," Allan said.

Larry Ellison, Oracle's CEO, said at a recent press conference that he expects most new database buyers to be installing Oracle8 by the end of the year. But when Oracle8 will predominate among the Redwood Shores, Calif., company's installed base is harder to predict, he added. □

Not the only player

Oracle wants users to view Oracle8's competition as Microsoft Corp. and the mainframe. But don't write off Unix rivals such as Informix Software, Inc. and Sybase, Inc. just yet, analysts said.

Oracle executives are openly dismissive of Menlo Park, Calif.-based Informix and Emeryville, Calif.-based Sybase, both of which have struggled financially.

Wayne Eckerson, an analyst at Patricia Seybold Group, said the problems at Informix and Sybase freed Oracle to "get its eyes out on something else" — namely, Microsoft. But in terms of technology, Oracle8 doesn't leave Informix and Sybase in the dust, said analyst Evan Bauer at Giga Information Group, Inc. in Cambridge, Mass. "Oracle8 is a much better database than Oracle7 was," he said. "But Oracle is still almost like a straight-A student."

Bauer said relying too heavily on Oracle could be costly for large users. "The folks who are getting the best deals out of Oracle are the ones who also have another database in their shops," he said. "If you give Oracle the opportunity, they'll milk it for all it's worth."

— Craig Stedman

App vendors

CONTINUED FROM PAGE 59

clude the ability to replicate data among servers in a distributed environment. But using such functionality will require application vendors to customize their products.

The one exception is Redwood Shores, Calif.-based Oracle, whose Application 10.7 package was designed to take advantage of Oracle8 features.

LOTS OF WORK

But the rest, such as market leader SAP AG in Wayne, Pa., will need to tweak their products to reach a similar level of performance (see chart). In fact, SAP isn't trying to port its current R/3 product to Oracle8. Instead, it is telling customers that the next version of R/3, Version 4.0, due at year's end, will be optimized for Oracle8's features.

Until now, database servers from Oracle and vendors such as Informix Software, Inc. were fairly generic. Application packages could be ported from one to another without much reworking. Analysts said Oracle8 is just the beginning of a new era of more complex software from database vendors, and application packages will need to be designed for specific databases.

"Right now [using Oracle8] is like buying an 18-wheeler truck and then driving it [only] back and forth from the office," Thier said. "The application vendors need to figure out which of all these features in the database are most important to the client from the client standpoint."

Once the application vendors figure out a user's wish list, they can tailor their product to run on the specific database. Such features are likely to include the replication and online transaction processing capabilities, and the ability to manage the data through the application rather than using database tools and doing the work at the database level. Thier predicted that such products would begin hitting the market next year.

Walter Curd, MIS manager at Fujitsu Microelectronics, Inc. in San Jose, Calif., said his company plans to upgrade to Oracle8 and R/3 4.0 in the next two years, after both products have a chance to mature. Having several databases supported by a single application package is helpful, Curd said. But as databases become more complex, software companies such as SAP will have to choose which they will dedicate resources to.

"The databases are becoming very diverse," Curd said. "Multiplatforms are nice things to have, but when it comes down to it, some work better than others. There are only so many resources a vendor can spend."

So users such as Curd won't be able to make their application and database decisions separately. □

When vendors are getting certified for Oracle8

Baan	[illegible]
Oracle	[illegible]
PeopleSoft	[illegible]
SAP	[illegible]

*To come with release of R/3 4.0

Document management

CONTINUED FROM PAGE 59

ton, Calif.-based Documentum, Inc., holds 500,000 documents and serves 20 simultaneous users. So far, it is performing well, Robinson said.

Document management systems store and track documents, letting users check documents in and out of a library and make changes. They typically use a relational database as well.

The systems are prized in organizations that take on collaborative projects — such as the development of a drug or the construction of a building — in which documents of various types must be accessed and modified across a network.

Document management systems traditionally have been costly to deploy, according to Arnie White, a senior analyst at International Data Corp. in Framingham, Mass. "That's one of the reasons that the average deployment includes just a few hundred users," she said.

During the past year, just about every maker of document management software has announced plans to support IP standards. Those making such announcements include Documentum; Burlington, Mass.-based PC Docs, Inc.; Dublin, Ohio-based Information Dimensions, Inc.; Waltham, Mass.-based Interleaf, Inc.; and Burlington, Mass.-based Novasoft Systems, Inc. Open Text Corp. in Waterloo, Ontario, also offers a Web-based document management system.

Clark Brady, document management architect at Eli Lilly and Co. in Indianapolis, said Web-browser clients will solve half his document management dilemma.

"The major issue we have is, How do we get the system rolled out? And browsers will help by eliminating the need for a special client," Brady said. But the other stumbling block — the fact that document management systems need to be customized for different areas of the business — won't be eliminated with Web hooks, he said.

And though Java will allow the customized applications to run on a variety of platforms, it won't provide a way to pass documents among disparate document systems, Brady said.

Instead, Brady is looking at the specification from the Open Document Management Architecture industry group — which defines how data may be shared among systems — as a way to achieve interoperability.

At Lilly, Documentum's document management system is used in research groups, but Novasoft's NovaWeb product suite is deployed in the manufacturing sector of the company. □

HP tools

CONTINUED FROM PAGE 59

of having two separate application development environments, users can now standardize on a common Windows NT-based environment, she said.

That sort of capability is important for companies that want to retain their investments in Unix while leveraging some of the cost and ease-of-use benefits of Windows NT, analysts said.

"And it helps users cuts down on costs by eliminating the need for a second development system," said John Montgomery, director of technical services at Embarcadero Corp., a mixed HP Unix and Windows NT shop in Alameda, Calif.

But Embarcadero won't use HP's latest tools because the company has stopped writing applications for its HP 9000 Unix servers, Montgomery said.

HP's new product is among the first to be released under its recently launched "Colliance" program to tie Windows NT into HP-UX environments. Earlier this year, HP inked a deal with Microsoft Corp. under which both companies will develop a range of integration technologies and services over the next few years.

SoftBench OpenStudio joins a growing list of similar products from a number of other hardware vendors and third-party vendors such as SoftWay Systems, Inc. in San Francisco; Citrix Systems, Inc. in Coral Springs, Fla; Insignia Solutions, Inc. in Santa Clara, Calif.; and Tektronix, Inc. in Wilsonville, Ore.

Products from those vendors and others extend Windows NT/Unix integration beyond remote log-on, file access and print services to cross-platform application development tools and full-fledged directory and application sharing. □

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Java becomes more consumer-friendly

By Sharon Gaudin

THE JAVA LANGUAGE last week took its first step out of the desktop realm and into the consumer market.

Sun Microsystems, Inc. released the specification for its new Java Application Environment, PersonalJava, last week for an approximate 60-day public review. PersonalJava, originally announced at Sun's JavaOne conference in April, was designed to run Java applications on smaller consumer devices with a smaller memory footprint.

Users and analysts said this step could move Java beyond the desktop, where it has become the fastest-growing development language in the last year and a half.

With PersonalJava, developers will be able to build Java applets that run on a much wider range of devices — from set-top boxes and game consoles to handheld coroputers and connectable smart phones.

"The next big medium for getting people hooked up to the Internet without spending $2,000 on a computer is televisions and set-top boxes," said Tom Obrey, chief information officer at PixelMedia, a Portsmouth, N.H.-based multimedia firm. "If PersonalJava works, then Java's potential jumps. How many TVs are out there? It would be really huge."

PersonalJava will be among the technologies Sun will push at Internet World later this month in Chicago. Sun's JavaSoft subsidiary hopes to show how it has come through on the promises made at JavaOne this spring.

PersonalJava differs from regular Java only by the amount of memory it takes up, company sources said. Smaller devices, such as handheld computers and smart phones, have smaller processes and can't handle as much of a memory footprint as a basic desktop machine.

"If PersonalJava works, then Java's potential jumps. How many TVs are out there? It would be really huge."
– Tom Obrey, PixelMedia

To be able to run Java applications on those smaller processors, some optional application programming interfaces (API) have been eliminated.

"It's not that we've reinvented 15 new APIs," the source said. "We've just architected them to take up less space."

Karen Boucher, director of The Standish Group International, Inc. in Dennis, Mass., said Java for the consumer market faces the same challenges its sibling has taken on for the past several years.

"It still comes down to the same battle, the same question," Boucher said. "Will vendors integrate it into their products? If they get support from manufacturers, it will be exciting."

The Sun source said the company is negotiating with several manufacturing companies to use PersonalJava but declined to give any names or details.

Another Java specifications is Embedded Java, an application environment designed for low-volume microprocessors such as low-end mobile phones, pagers and fax machines. It is due out this year. □

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Sept. 29	White Paper: Remote Access Distribution at SIM Fall Conference & Networld + Interop	Aug. 15	Sept. 5

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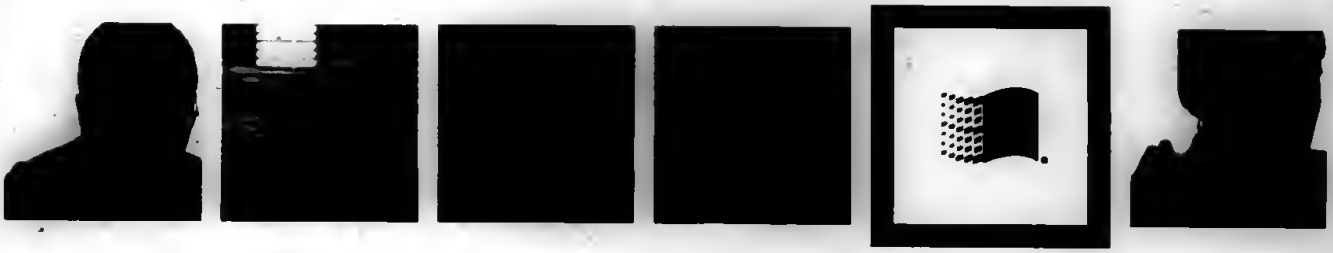

No.

After all, people are different. Jobs are different. Companies are different. And people need different types of computers to get their jobs done. Some need powerful PC's and workstations. Some need light and powerful laptops. Some need hand-held devices. Some need simple terminals running off a network. And some need a combination of machines.

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Briefs

[illegible]

Lockheed staffers like their ETV

▸ *Employee TV network broadcasts satellite launches, improves morale*

By Matt Hamblen

LAUNCHING a new satellite used to be frustrating for workers at Lockheed Martin Missiles & Space because they couldn't witness the launch and the fruit of their labors.

But in the past seven months, Lockheed officials have brought live television broadcasts of satellite launches from around the world to the Sunnyvale, Calif., headquarters. They appear on 150 monitors in hallways, lobbies and cafeterias, packaged around the clock with other television programming about employee benefits, health tips and corporate news on the latest project bids and business plans.

"People get to see the $1 million satellites they have been working on in the last year go up, and it's a pretty big rush," said Biff Geiser, one of two coordinators of Employee Television (ETV), which complements a Lockheed intranet.

The live broadcasts are stored digitally and sent over the network to about 35 buildings and nearly 11,000 workers, said Jeff Richmond, the second coordinator of ETV. Analog technology was available before to bring the satellite launches to monitors, but Lockheed wanted a richer programming package that could provide news to employees, including recorded interviews with top managers about changes that would affect them directly, Richmond said.

"ETV will never replace face-to-face communications, but this way people can glean a lot of critical information in a short time while waiting for meetings and eating lunch," said Janet Wrather, vice president of communications.

LENDING A HAND

Lockheed officials chose Target Vision, Inc. in Rochester, N.Y., to provide consulting services, hardware and digital compression software to store thousands of hours of video for reuse. Target Vision also provided broadcast and editing software to help package and distribute text and graphics on ETV.

Target Vision officials estimated their services and prod-

Employees, page 72

THIN CLIENTS

HDS boosts its network computers

By April Jacobs

HDS NETWORK SYSTEMS plans next month to introduce its Ultra Thin Client that will let users upgrade from a Windows terminal to a network computer.

The King of Prussia, Pa., company — the first to ship network computer systems bundled with Netscape Communications Corp.'s Navigator — is launching its new systems designed to replace both terminals and PCs.

That kind of flexibility should appeal to users because the network computer hardware market has so many different types of hardware — many of which can't be upgraded, said Neil MacDonald, a research director at Gartner Group, Inc. in Stamford, Conn.

"It's a great idea because the first reason people are attracted to [network computers] is to have an alternative to a PC,"

HDS, page 72

Supercomputers could help doctors combine brain images with other scans to create and analyze 3-D views of the brain

Supercomputers shift focus

By Tim Ouellette

SUPERCOMPUTING CENTERS better known for hashing out complex particle physics equations are starting to take a business focus that could help companies sift through enormous databases quickly.

Businesses with a lot to gain include credit-card companies, hospitals, insurance agencies, marketing firms and others that have a sea of data and no way to navigate it completely.

The move could give these corporations the ability to conduct data modeling at a terabyte and petabyte scale that currently can't be reached because of machine, bandwidth and soft-

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REVIEW▸ *Digital's K6-based Venturis*

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The answer to both is yes. Unfortunately, you may find better value elsewhere.

Digital positions the Venturis FX-2 family as its entry-level desktop machines for the corporate market, offering both Intel Corp. and AMD processors. My test machine used the 233-MHz AMD-K6 processor with 256K bytes of Level 2 cache, 64M bytes of RAM, integrated video, a 2G-byte hard

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OVERALL GRADE C+

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Briefs

New Compaq PCs

Compaq Computer Corp. last week announced an array of desktops and notebooks for business and consumers. Armada business notebooks, starting at $3,699, offer a 150-MHz Pentium MMX chip with 16M bytes of RAM and a 12-in. screen display. The new consumer-oriented Presario models, due by the end of the month, start at $999 and offer multimedia capabilities and "one-click" access to the Internet. New Presario notebooks, due next month, start at $2,299 and include a 150-MHz Pentium chip and a 12.1-in. screen display.

IBM readies libraries

IBM last week announced its latest Magstar MP 3575 tape storage libraries, ranging in capacity from 300G bytes to 4.8T bytes and supporting up to six tape drives. The Magstar MPs feature a self-contained tape path and can retrieve a tape, load it, search it and transfer a data file in less than 19 seconds, according to officials at IBM's Storage Systems Division in San Jose, Calif. The MPs will ship in September. Prices will start at $19,500 for the libraries. Each Magstar tape drive costs $8,500.

European disk report

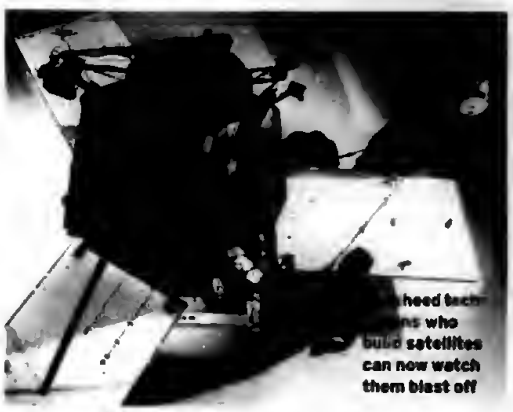
Due to forecasted growth in Digital Video Disk and recordable CD drives, the European optical disk drive (ODD) market is expected to grow at high rates through 2003, according to new research from London-based research firm Frost & Sullivan.

By 2003, revenues from ODD drives will reach $5.7 billion in Europe, and 32.5 million units will ship, according to the report.

WebTV printer

Hewlett-Packard Co. in Palo Alto, Calif., last week launched the Deskjet 670TV printer designed to let users of WebTV Networks, Inc.'s set-top boxes print images from the Internet. Available in the fourth quarter, the printer is expected to cost about $200.

Lockheed staffers like their ETV



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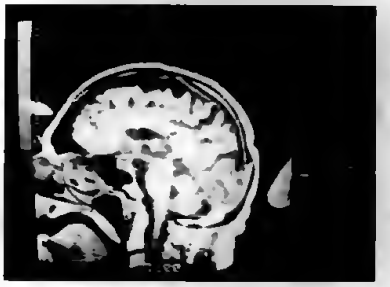

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Supercomputers may aid business functions

CONTINUED FROM PAGE 69

ware limitations.

For example, pharmaceutical companies, which have gargantuan amounts of research data available, could get a clear view of all available data when developing new products.

"By October, we will be piloting a system that focuses on analyzing large amounts of data, not just the typical number crunching done here," said Reagan Moore, associate director of enabling technologies at the San Diego Supercomputer Center.

SCIENCE APPLICATIONS

Companies that data mine now can only track limited data sets made up of short transaction records. For example, scientists who examine digital photos of the night sky or doctors who examine detailed brain scans are forced to analyze a very small region of the image at a time.

"We are learning that [for CEOs], managing terabytes is a more important concept than increasing teraflops [the measurement of supercomputer power]," said Robert Hollebeek, a professor who heads up the National Scalability Cluster Project at the University of Pennsylvania in Philadelphia.

Hollebeek oversees an effort called Hubmed, which uses an IBM SP parallel processing server to archive digital X-ray images. Moore's project in San Diego is also based on an SP — a souped up version of IBM's RS/6000 Unix server best known as the chess playing Deep Blue — to archive huge sets of scientific data.

PETABYTE HEIGHTS

Large companies, climbing to the same archival heights, may find this new capability useful in exploring mountains of records. Moore said he expects the size of business-related data sets to get into petabytes (1,000 trillion bytes) by 2000. Not only does this increase come from businesses' desire to maintain more data, but video files, sound bites and digital images are finding their way into mission-critical corporate databases.

"We need a monster library of data sets to support this," Moore said. "The sizes are going to expand by a factor of ten."

That's where the SP's parallel processing capabilities come into play.

The SP will front a digital archive housed in IBM's Magstar tape libraries. The goal is to read a complete data archive on a daily basis. Currently, only 2T bytes out of a 30T-byte archive can be read in one day.

With that capability, a doctor searching for similar cases to a brain scan he has taken can get all the information he needs right away.

Although hardware improvements have made much of this possible — faster disk systems, better I/O channels and improved tape robotics — Moore and Hollebeek said arranging the data for parallel access is crucial, and better software tools are needed to make the effort work commercially. □

Employees like ETV

CONTINUED FROM PAGE 69

ucts to Lockheed have so far cost $100,000. In coming months, Lockheed will decide whether to bring the ETV content to thousands of desktop PCs up from the 150 monitors.

"It's definitely worth the money," Wrather said. She said ETV's main advantage is its ability to provide high-impact information in a short amount of time.

Communications and learning analyst Diane Gayeski, a partner at OmniCom Associates in Ithaca, N.Y., said the package of services and products provided by Target Vision is unique among several vendors.

"It's nice to have a newsletter or [electronic mail] if you have a computer at your desk, but what about bank tellers or nurses or assembly line workers?" Gayeski said. "They are traditionally left out of communications."

The payback for such a system includes a boost to morale, which can lower turnover costs, Gayeski said.

Wrather said one concern before the project started was whether managers would be upset if their workers were watching TV when they should be working. "If you have the top man endorsing this, it makes it more acceptable," she said. And Lockheed Martin Missiles & Space President K. Michael Henshaw has been very supportive, she said. □

> "If you have the top man endorsing this, it makes it more acceptable."
> – Janet Wrather, Lockheed

REVIEW ▶ *Digital's Venturis FX-2*

System OK for business but falls short for multimedia

CONTINUED FROM PAGE 69

disk, a 12-speed CD-ROM drive, a 17-in. monitor and Windows 95 for $2,660. The basic model costs $1,414 and comes with 32M bytes of memory, but without a CD-ROM drive or monitor. Both prices are similar to Intel Pentium MMX computers.

As far as compatibility, the AMD-K6 includes most MMX and Pentium Pro instructions. In my tests, no Windows application noticed the difference, and I feel the AMD-K6 is a safe corporate choice. But two Intel benchmarks objected. One benchmark spotted that the K6 didn't support a Pentium Pro/II write combining instruction, but the benchmark otherwise worked. The other benchmark stumbled over the Venturis' video driver.

PERFORMANCE ISSUES

As for performance, I agree with Digital's claims that the Venturis runs 16- and 32-bit applications equally well. Using PC World's WorldBench test suite, which tests both types of applications under Windows 95, the system scored a 237. That is on par with machines that use 200-MHz Pentium MMX or Pentium Pro chips, and about 9% behind computers that use 266-MHz Pentium IIs.

But the Venturis fares poorly with just 32-bit applications. Using Bapco's SysMark for Windows NT 4.0, the Venturis scored a lackluster 147, which is about equal to a 200-MHz Pentium MMX but well behind 200-MHz Pentium Pros and half the score of a 266-MHz Pentium II.

Some differences are attributed to the K6's off-board Level 2 cache, which runs at 66 MHz. Pentium IIs run on-board Level 2 cache at half the processor speed. But some of the Venturis' underperformance is because of the skimpy single megabyte of video memory Digital offers. For any serious multimedia use, 2M bytes of video memory is mandatory.

SLOW MULTIMEDIA

But the Venturis' weak score (127) on Intel's Multimedia Application test shows it placing worse than the Micron Electronics 200-MHz Pentium and Pentium MMX desktop used in a Pentium II review earlier this year [CW, May 12]. For multimedia, there are better machines at the Venturis' price.

As an entry-value machine, the Venturis FX-2 offers adequate performance to power all business applications. But for multimedia applications or the true desktop strainers, such as computer-aided design and manufacturing, a few dollars more elsewhere buys a much better machine. □

DeVoney is a freelance writer in Seattle. He can be reached at chrisd@cybercritic.com.

NEW PRODUCT

ARIEL CORP. has announced RASCAL, a high-density 56K bit/sec. remote access system for PC-based servers running Windows NT.

According to the Cranbury, N.J., company, the RASCAL RS1000 Series combines 24 56K bit/sec. Rockwell K56 flex modems with a T1/Primary rate Integrated Services Digital Network interface on a pair of Industry Standard Architecture bus cards.

Pricing starts at $9,600.

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HDS boosts thin clients

CONTINUED FROM PAGE 69

MacDonald said. "What HDS is saying is that this is a continuous spectrum of devices, and that's why their design is more modular in fashion."

The Ultra Thin Client lets users add functionality dynamically. For example, in its most elementary form, the Ultra Thin Client runs Windows applications from a server using something such as Citrix Systems, Inc.'s ICA protocol. But if a user wants more functionality, such as a World Wide Web browser, electronic mail or Java, the applications can be downloaded and run locally, from a server or both. Pricing wasn't available.

> **HDS NETWORK SYSTEMS**
> Will offer upgradable Windows terminals to provide full access to Java-based applications, E-mail and browsers.

USER FLEXIBILITY

Users said the HDS offering would give them added flexibility when choosing thin clients.

"This will really address the terminal market without locking people in," said Don Resh, senior vice president and chief information officer at Retired Persons Services, Inc. in Alexandria, Va., which already uses more than 1,000 HDS @Workstation clients.

"I've already set my vision of the [network computer] — I want to be able to run NT today and maybe Java tomorrow," Resh said. □

Managing

Master's: Your destiny?
Some IS pros say getting an MBA is necessary. But to some, it can be a waste of time. Page 78

KILLER APPS

People are being killed and injured by software and embedded systems. But IS managers can help prevent high-tech manslaughter by ensuring safety and high quality through rigorous testing and preparation.

ALICIA BUELOW

AN INTRAVENOUS medication pump runs dry and injects air into a patient. A monitor fails to sound an alarm when a heart stops beating. A digital display combines the name of one patient with medical data from another. A respirator delivers "unscheduled breaths" to a patient.

Those scary scenarios have two things in common: All the devices were recalled under orders from the U.S. Food and Drug Administration (FDA), and all owed their potentially deadly performances to flaws in the software that controls them. The FDA has issued 20 such recalls so far this year. The agency says there isn't any evidence that the quality of software is getting worse, but defects are on the rise as software becomes pervasive in medical devices.

"We are seeing more software problems," says E. Stewart Crumpler, a software specialist at the FDA's Center for Devices and Radiological Health. "Have there been deaths and injuries due to software? You betcha."

Experts say the software that controls medical devices, nuclear power plants, airplane flights and the like often isn't up to the high safety standards demanded of physical entities such as cars, appliances and lawn mowers. Failure to make safety-critical software safe is largely one of management, experts say. Managers tend to overestimate the quality of software; they frequently don't understand safety and quality concepts; and their priorities too often lie elsewhere.

"Managers are so focused on short-term costs, they fail to include the real-world costs of shoddy software," says M. E. Kabay, director of education at the National Computer Security Association in Carlisle, Pa. Software development managers "don't really integrate product quality into their thinking."

Killer Apps, page 74

BY GARY H. ANTHES

APPS

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"The number of accidents in high-tech systems seems to be increasing," says Nancy Leveson, a computer sciences professor at the University of Washington and author of *Safeware — System Safety and Computers*. "These incidents happen all the time, but because of liability, nobody discusses them in public."

Software errors have been triggering accidents for years, including the following:

- In the mid-1980s, a bug allowed a radiation machine to deliver huge overdoses to six cancer patients, killing three of them.
- Transmission software was implicated in a 1991 accident in which a bus plunged off a California mountain, killing seven Girl Scouts.
- Because of a flaw in its targeting software, a Patriot defense missile allowed an Iraqi Scud missile to slam into a barracks during the Gulf War, killing 29 Americans.

And just in the past year, software errors have been blamed for the following close calls:

- *The Washington Times* in May reported that a malfunctioning command and control system spontaneously switched Russian nuclear missiles to "combat mode" on several occasions.
- A Boeing 747 in February scraped its tail on the runway as it took off and then had trouble flying. The cause: Poorly tested software miscalculated the plane's center of gravity.
- General Motors Corp. last July recalled nearly 300,000 cars because of a software flaw that could cause an engine fire.

ROOM TO IMPROVE

"Safety-critical software is nowhere near as good as it could be," says Peter Neumann, principal scientist at SRI International, Inc. in Menlo Park, Calif., and moderator of the Risks Forum newsgroup on the Internet.

"The run-of-the-mill software developer does not have the slightest idea what the risks are or what techniques to use to ensure reliability and safety," he says.

Leveson says complacency plays a key role in most major accidents. Developers of missiles or nuclear power plants wouldn't buy their hardware at a thrift shop, she argues, but they're apt to do the equivalent with software by building safety-critical applications on top of buggy commercial operating systems. "They have this tremendous confidence in technology they don't understand," she says.

Another common management error is the failure to establish an effective safety information system that tracks hazards, accidents and trend data, Leveson says. As a result, many organizations with smart and well-meaning people nevertheless lack the information needed to build safety in to systems.

Baltimore Gas and Electric Co. doesn't employ any unusual techniques to develop the software that runs its two nuclear reactors. But it takes special pains with requirements definition, quality reviews, testing, documentation and configuration control, says Gary Spurrier, account director for nuclear information technology services at Baltimore Gas.

Software from the internal information systems group and vendors must be developed in compliance with federal Quality Assurance Criteria for Nuclear Power Plants. "When we choose a new vendor, we send an audit team to make sure they have a software quality assurance program and it meets the regulations," Spurrier says.

The utility's IS group has an alter ego in its nuclear design engineering group. IS conducts design reviews, code reviews and systems tests, and design engineers also perform those functions. Thus, software defects have two chances of being caught.

Hewlett-Packard Medical Group in Andover, Mass., which makes monitors for critically ill patients, proves out its safety-critical software by special methods, including "formal inspections" in which specifications and code are analyzed by experts according to a set of strict rules and procedures.

Formal inspections are time-consuming, but the benefits far outweigh the costs, says Brian Connolly, an engineering manager at the medical group. "The human cost of a product recall is horrible," he says. "It's 10,000 times as costly to correct a defect in the field than if you had found it in the specification phase."

Alan Barbell, a project manager at Environmental Criminology Research, Inc., in Plymouth Meeting, Pa., an institute that evaluates medical devices, says software designers must see for themselves how their products are going to be used. "A lot of companies have their marketing people go out in the field and then come back and relay information through a filter," he says.

David Croston, director of clinical engineering at Buffalo General Hospital in Buffalo, N.Y., says the quality of software in medical devices is good and improving. But he says he still sees "unexplainable software glitches." He says the hospital tests new gear for about 30 days before paying for it. "Manufacturers do a good job, but when we get it into the true clinical environment, and users are doing things slightly differently, that's when the real problems can come," he says.

Sometimes IS managers underestimate how critical the software is. Robert Charette, a computer risk specialist and president of ITABHI Corp. in Fairfax, Va., tells of such myopia among managers at the London Ambulance Service.

The service brought up a computerized dispatching system in 1992. It was poorly tested and beset by bugs. Emergency callers waited 30 minutes or more to get through; calls disappeared from dispatchers' screens; ambulances arrived hours late. As many as 46 people died in the first two days, due partly to delays in getting medical help. But not one coroner's report listed the dispatch system as the cause of death. "The ambulance people did not view the software as safety-critical," says Charette, chairman of the Risk Management Advisory Board of the Software Engineering Institute at Carnegie Mellon University in Pittsburgh. "If you don't see it as safety-critical, you don't take the extra care."

And there are perverse incentives to avoid having your software seen as safety-critical, Charette says. Software that can injure or kill is a red flag in litigation, he says, and can drive developers' insurance rates through the roof. □

Anthes is Computerworld's *senior editor, special reports.*

HOW TO AVOID 'KILLER APPS'

- Recognize that no amount of testing can remove all bugs or risks.
- Don't confuse safety, reliability and security. A system may be 100% reliable, but neither secure nor safe.
- Tightly link your software and safety organizations.
- Build and use a safety information system.
- Instill a management culture of safety.
- Assume that every mistake users can make will be made.
- Don't discount low-probability, high-impact events.
- Use good software engineering practices. Emphasize requirements definition, testing, code and specification reviews and configuration control.
- Don't let short-term cost considerations overshadow long-term risks and costs.

Food, drug and software administration

Since 1986, there have been 450 reports filed with the FDA detailing software defects in medical devices. Twenty-four incidents led to deaths or injuries.

But just how many software glitches exist in medical devices is anyone's guess. The FDA receives thousands of reports each year on device defects that caused or could have caused death or injury. Because the reports must be filed within five to 15 days of an incident, manufacturers often don't know exactly what caused a failure at the time the report is written, says E. Stewart Crumpler, a software specialist at the FDA.

And the reports may fail to disclose software's role in a defect. For example, a report might say only that an implanted heart defibrillator failed prematurely because of an unexpectedly short battery life.

Last year a defibrillator did just that, and it turned out that a software defect caused excessive battery drain. The affected patient required emergency surgery, classified in FDA reports as an "injury."

On June 1, new federal regulations took effect that greatly extended the FDA's authority for auditing medical device manufacturers. For the first time, the regulations authorize the FDA to examine premanufacturing processes such as software design. The new emphasis on software brings the regulations into compliance with the International Standards Organization 9000 quality standards. "Management control and involvement is important, and that's beefed up in the new regulation," Crumpler says. "Management must establish and carry out quality policies and procedures." — Gary H. Anthes

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IS AN MBA RIGHT FOR YOU?

IS professionals say they can recoup the cost of an MBA in just one year. Yet it STILL can be a waste of time.

By Alan S. Horowitz

DEANNA CASTLE was afraid opportunities would pass her by. Aamer Baig's clients were asking him business questions he couldn't answer.

Both came up with the same solution to their problems: Get an MBA. But is it the right answer for you? IS professionals frequently have to decide if an MBA is worth the time and expense. Abraham Seidmann, Xerox Corp. professor of computers and information systems at the William E. Simon Graduate School of Business Administration at the University of Rochester in Rochester, N.Y., says the following three forces are pressuring IS professionals to decide:

- The decentralization of IS is putting IS pros closer to nontechnical users.
- As more money is invested in IS, upper management expects IS staff to know how to maintain strategic planning, capital budgeting and economic controls.
- As information technology's impact transcends technical issues, IT professionals are becoming the "architects of change."

Not surprisingly, academics say an MBA can be your ticket if you want to move into management or consulting. "An MBA is becoming almost a necessity for people at the project-management level and above," Seidmann says.

Andersen Consulting's Carolyn Koleske also likes to hire MBAs. "For someone who wants to broaden their career horizon and work in technology management, consulting or have a broader perspective of the business world, I would strongly urge they get an MBA," she says. Koleske is based in Minneapolis and is Anderson's director of recruiting for the U.S. and Canada. Her firm hires about 300 MBA-holders a year.

Networking is another potential benefit. Students often form helpful lifelong relationships, says Harvey Shrednick, a professor at the College of Business at Arizona State University, and a former chief information officer at Corning, Inc. Jeremy Seligman, vice president and CIO at Frontier Corp. in Rochester, N.Y., says he landed at least one job because of contacts he made at school while studying for his MBA.

Then there's the money. Students with IS concentrations at Pittsburgh's Carnegie Mellon University after graduation found jobs that offered them an average annual salary of $72,100. That doesn't include onetime signing bonuses — with a Carnegie Mellon degree, those bonuses can be between $5,000 and $30,000, says Ken Keeley, director of the Career Opportunities Center at Carnegie Mellon's Graduate School of Industrial Administration.

Baig, a consultant, will more than double his previous salary upon graduation from Carnegie Mellon. The new salary will more than cover his two years of tuition, which is $21,000 per year. Castle, an AlliedSignal, Inc. employee, was promoted while working on her MBA at Arizona State and again within a month of graduation. "I earned back what I spent on [the degree] in just a year. It happened almost [in] real time," she says.

But an MBA isn't for everyone. Koleske says if IS professionals want to stay strictly focused on technology, they may not want to invest the money and time needed to get an MBA. Those who don't aspire to move up in an organization or to a larger organization also might forego the degree, Keeley says.

Seidmann says by the time you're in your mid-40s, MBAs don't leverage much as far as career growth is concerned. And not all IS managers place great value on an MBA, including MBA grads such as Mike Ouska, second vice president of IT at PNC Mortgage in Vernon Hills, Ill. "An MBA would be a plus, but I don't look for it. I'm seeing good candidates who aren't heavy on degrees, but on professional training," he says.

> "I think I earned back what I spent on [the degree] in just a year. It was happening almost [in] real time."

"We're looking for people with computer skills whom we can train," says Bard White, CIO and worldwide MIS director at Spalding Sports Worldwide, Inc. in Chicopee, Mass.

So, what should you do?

If you want to move into management, if you want to be a consultant, if you are young and ambitious and want to climb to the top, an MBA is worth the investment.

But if you want to stay focused on technology, if you are satisfied with where you are or have other priorities such as your family — getting an MBA is difficult and time-consuming — the degree isn't likely to be worthwhile.

The main thing is to choose before it's too late.

"The biggest mistake of people in the IS world is they defer the decision to get an MBA for too long," explains John Stevenson, vice president of IT at Lennox International, Inc. in Richardson, Texas. □

Horowitz is a freelance writer in Salt Lake City.

Pre-admission questions

What to ask if you are considering enrolling in an MBA program:

- **REPUTATION: How good is the reputation of the university, the MBA program and its technical education?**
- **BREADTH: Does the school offer a wide variety of courses? Does it have specialties in areas you're interested in?**
- **EARNINGS: What offers are graduates getting? How many offers are in IT?**
- **PLACEMENT: Have graduates from 10 or 15 years ago reached high positions?**
- **FACULTY: Has the faculty held high positions in the industry? Do they have contacts in the IT industry? Are they widely published?**
- **LOCATION: If geography doesn't matter, a university in a region known for high tech may be desirable.**

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HEWLETT PACKARD

LEILANI ALLEN

WHEN FAIR AND OBJECTIVE ISN'T

Performance reviews are an essential part of any manager's job, yet most managers find the task extremely difficult. Partly because we have a natural reluctance to judge others; partly because we are afraid of potential reactions.

We have several objective measures to use (function-point output, service-level objectives achieved). But when it comes to evaluating the "fuzzy" skills (communications, teamwork, business acumen), IS managers often are at a loss. We pride ourselves on our objectivity. But the subjective factors — and our own biases — often carry considerable weight. How can we ensure a fair and objective review process? How can we fairly review someone very different from ourselves? Or conversely, someone with whom we're very comfortable? How do we correct for hidden bias?

CONSIDER THESE THREE CASES:

THE EMIGRE

Ivan emigrated from the former Soviet Union five years ago. After attending a technical institute, he was hired as a junior programmer. He was assigned to one of the lowest-level tasks, programming documents. After three years, he was still at the same grade because of his limited English skills. When he attended meetings with users, he could barely keep up with the conversation. He couldn't take minutes, and his efforts at documentation were done at a huge expenditure of time and managerial review.

Ivan's manager, Bob, gave him a satisfactory review each year. After all, Ivan worked hard, was pleasant and friendly and did a "gruot" job without complaining. Bob dutifully ooted in each review that Ivan's English had to improve. Ivan dido't follow that advice, because he had figured out how to get by without it.

The CIO was concerned about this "unpromotable" employee. He asked Bob whether he didn't push Ivao more because it was convenient to have Ivan stay in his current job. When pressed, Bob admitted to that rationale. And because he found it frustrating to communicate with Ivan, Bob said he left well enougb alone. Besides, as far as he knew, Ivan was happy. Bob was happy, so what was the issue?

THE NEW FEMALE MANAGER

Dirk was an IS director with three direct reports, all male. All four had similar backgrounds. They regularly lunched together at a local coffee shop, had drinks after work and generally got along very well. Dirk considered himself a real "people person" and was generally liked in the department for his hands-off, genial style.

Dirk hired a female manager, Jeannette, to start up a group within the department. She was slightly younger than the other managers, had a better education and generally favored a more disciplined style. Dirk continued to invite the male managers to lunch and to socialize after dinner. Jeannette realized that those were really informal staff meetings, where ideas and plans (and company gossip) were exchanged. But she felt she couldn't just invite herself along, and Dirk didn't include ber. To compensate, she tried to establish a formal staff meeting, but Dirk and the others frequently found excuses to postpone or cancel the meetings.

At her first performance review, Dirk praised Jeannette's technical accomplishments but rated her managerial capabilities negatively. His major issue was that Jeannette wasn't a "team player," and therefore dido't really contribute to the department's development. He wrote that she was "overly concerned with administrivia" and couldn't see the big picture.

Jeannette was taken aback by the review and wrote a formal protest to human resources. Dirk was genuinely surprised by her actions, but cited them as further proof of Jeannette's lack of understanding of management realities. HR let the review stand. A few months later, sbe resigned.

THE TROUBLED WIDOWER

Albert was a widower raising a teenage son. The son had significant behavioral problems, and Albert alternated between seeking counseling for the son and bailing him out of police custody for various misdemeanors. Albert's work began to suffer, bis attendance became erratic and he was constantly distracted. Albert's newly promoted manager, Bruce, was young and ambitious. He wanted to build a "world class" team that would get the plum assignments and help Bruce make a name for himself in the company. He fostered a "work hard/play hard" spirit — plenty of overtime was expected.

Not unexpectedly, Bruce's review of Albert was very negative. He cited Albert's absenteeism, lack of productivity, inability to work overtime and general lack of initiative. He recommended that Albert be put on corrective review. The senior vice president of IS questioned whether Bruce was showing sufficient empathy. Bruce's response: Albert was holding back the team. The rules had to apply to everyone. It was too bad about Albert's kid, Bruce said, but that shouldn't be taken into consideration.

JUDGMENT CALL: Each review was probably well within the guidelines for fairness at most companies. Yet it's clear that each manager also made his evaluation based in part on what was comfortable and agreeable.

Bob should have realized that the "convenient arrangement" wasn't in Ivan's best long-term interest. Bob should have made a more explicit link between language skills and career success. Rather than avoid Ivan, Bob should have made more of an effort to engage him in conversation, providing some on-the-job language practice. He also should bave given Ivan assignments that tested these skills.

Many argue that an employee's lunch hours or time after work are their own, and they shouldn't have to be inclusive. Yet Dirk's activities went beyond mere socializing, since company matters were discussed. Even if they weren't, Jeannette should have been invited along and given the opportunity to learn how to interact with her boss and peers in a way they preferred. Most important, the "team player" criteria should be explicitly defined to include gender-neutral behaviors.

Bruce's argument was technically correct but betrayed a real myopia. Employees want their companies to recognize that there must be a balance between work and home responsibilities. Bruce, noting Albert's problems, might have suggested going part time, or he could have investigated a telecommuting option. Such arrangements, even if they are temporary, might help salvage a career. Other employees, rather than feel resentful, would be encouraged to see that the company can make accommodations. Fair doesn't mean treating everyone exactly the same; it means giving each person the means and direction to succeed. □

Allen's column deals with the kinds of people issues managers face every day but are reluctant to discuss openly. Each is based on a real-life situation. The names and certain circumstances are changed to protect confidentiality. Allen is a director at Tenex, a management consulting firm in Burlington, Mass.

Wanted: Smart managers

What management technique do you use that you consider particularly effective? Send a brief synopsis, and we'll work with you to develop a case study for publication. Topics include: interviewing candidates, hiring and firing, counseling, handling conflict, planning, budgeting, controls and reporting — the whole gamut of management issues. E-mail Leilani Allen at lallen@tenex.com (no vendors or consultants, please).

LEILANI ALLEN

WHEN FAIR AND OBJECTIVE ISN'T

Performance reviews are an essential part of any manager's job, yet most managers find the task extremely difficult. Partly because we have a natural reluctance to judge others; partly because we are afraid of potential reactions.

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CONSIDER THESE THREE CASES:

THE EMIGRE

Ivan [illegible]grated from the former Soviet [illegible] five years ago. After attending [illegible]hnical institute, he was hired as [illegible]nior programmer. He was assi[illegible] to one of the lowest-level task[illegible]rogramming documents. After t[illegible] years, he was still at the same grad[illegible]ecause of his limited English skills. When he attended meetings with users, he could barely keep up with the conversation. He couldn't take minutes, and his efforts at documentation were done at a huge expenditure of time and managerial review.

Ivan's manager, Bob, gave him a satisfactory review each year. After all, Ivan worked hard, was pleasant and friendly and did a "grunt" job without complaining. Bob dutifully noted in each review that Ivao's English had to improve. Ivan didn't follow that advice, because he had figured out how to get by without it.

The CIO was concerned about this "unpromotable" employee. He asked Bob whether he didn't push Ivan more because it was convenient to have Ivan stay in his current job. When pressed, Bob admitted to that rationale. And because he found it frustrating to communicate with Ivan, Bob said he left well enough alone. Besides, as far as he knew, Ivan was happy. Bob was happy, so what was the issue?

THE NEW FEMALE MANAGER

Dirk was an IS director with three direct reports, all male. All four had similar backgrounds. They regularly lunched together at a local coffee sho[illegible]nks after work and gen[illegible]ery well. Dirk considered himse[illegible] real "people person" and wa[illegible]lly liked in the departme[illegible]s hands-off, genial style.

[illegible] hired a female manager, Jean[illegible]o a group within the [illegible] was slightly younger than the other managers, had a better education and generally favored a more disciplined style. Dirk continued to invite the male managers to lunch and to socialize after dinner. Jeannette realized that those were really informal staff meetings, where ideas and plans (and company gossip) were exchanged. But she felt she couldn't just invite herself along, and Dirk didn't include her. To compensate, she tried to establish a formal staff meeting, but Dirk and the others frequently found excuses to postpone or cancel the meetings.

At her first performance review, Dirk praised Jeannette's technical accomplishments but rated her managerial capabilities negatively. His major issue was that Jeannette wasn't a "team player," and therefore didn't really contribute to the department's development. He wrote that she was "overly concerned with administrivia" and couldn't see the big picture.

Jeannette was taken aback by the review and wrote a formal protest to human resources. Dirk was genuinely surprised by her actions, but cited them as further proof of Jeannette's lack of understanding of management realities. HR let the review stand. A few months later, she resigned.

THE TROUBLED WIDOWER

Alb[illegible] widower raising a teen-a[illegible]on had significant behavioral pr[illegible]ms, and Albert alternated [illegible] seeking counseling for the son a[illegible]ing him out of police custody for [illegible]ous misdemeanors. [illegible]egan to suffer, his attenda[illegible]ecame erratic and he was constantly distracted. Albert's newly promoted manager, Bruce, was young and ambitious. He wanted to build a "world class" team that would get the plum assignments and help Bruce make a name for himself in the company. He fostered a "work hard/play hard" spirit — plenty of overtime was expected.

Not unexpectedly, Bruce's review of Albert was very negative. He cited Albert's absenteeism, lack of productivity, inability to work overtime and general lack of initiative. He recommended that Albert be put on corrective review. The senior vice president of IS questioned whether Bruce was showing sufficient empathy. Bruce's response: Albert was holding back the team. The rules had to apply to everyone. It was too bad about Albert's kid, Bruce said, but that shouldn't be taken into consideration.

JUDGMENT CALL: Each review was probably well within the guidelines for fairness at most companies. Yet it's clear that each manager also made his evaluation based in part on what was comfortable and agreeable.

Bob should have realized that the "convenient arrangement" wasn't in Ivan's best long-term interest. Bob should have made a more explicit link between language skills and career success. Rather than avoid Ivan, Bob should have made more of an effort to engage him in conversation, providing some on-the-job language practice. He also should have given Ivan assignments that tested these skills.

Many argue that an employee's lunch hours or time after work are their own, and they shouldn't have to be inclusive. Yet Dirk's activities went beyond mere socializing, since company matters were discussed. Even if they weren't, Jeannette should have been invited along and given the opportunity to learn how to interact with her boss and peers in a way they preferred. Most important, the "team player" criteria should be explicitly defined to include gender-neutral behaviors.

Bruce's argument was technically correct but betrayed a real myopia. Employees want their companies to recognize that there must be a balance between work and home responsibilities. Bruce, noting Albert's problems, might have suggested going part time, or he could have investigated a telecommuting option. Such arrangements, even if they are temporary, might help salvage a career. Other employees, rather than feel resentful, would be encouraged to see that the company can make accommodations. Fair doesn't mean treating everyone exactly the same; it means giving each person the means and direction to succeed. □

Allen's column deals with the kinds of people issues managers face every day but are reluctant to discuss openly. Each is based on a real-life situation. The names and certain circumstances are changed to protect confidentiality. Allen is a director at Tenex, a management consulting firm in Burlington, Mass.

Wanted: Smart managers

What management techniques do you use that you consider particularly effective? Send a brief synopsis, and we'll work with you to develop a case study for publication. Topics include: interviewing candidates, hiring and firing, counseling, handling conflict, planning, budgeting, controls and reporting — the whole gamut of management issues. E-mail Leilani Allen at lallen@tenex.com (no vendors or consultants, please).

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21. Dir./Mgr. MIS Services, Information Center
22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr./PC Mgr., Tech. Planning, Administrative Services
23. Dir./Mgr. Sys. Development, System Architecture
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60. Sys. Integrators/VARs/Consulting Management

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12. Vice President, Asst. Vice President
13. Treasurer, Controller, Financial Officer

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Operating Systems
(a) Solaris (e) Mac OS
(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep

App. Development Products ☐ Yes ☐ No
Networking Products ☐ Yes ☐ No
Intranet Products ☐ Yes ☐ No

4. Which of the following products do you buy, specify, recommend or approve the purchase of? (Check all that apply.)
(a) ☐ Internet software
(b) ☐ Internet browsers
(c) ☐ Web authoring/development tools

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(b) ☐ Internet browsers
(c) ☐ Web authoring/development tools

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Buyer's Guide

VALUE NOTEBOOKS: HEY, NOT BAD!

By Chris DeVoney

The ongoing changes in notebooks produce a siren song that constantly draws our attention to the latest and greatest. While our gaze is riveted to the high end with its high price, we sometimes miss lower-priced notebooks that deliver excellent performance for the price.

I reviewed several midpriced notebooks, ranging from $1,995 to $2,995, to see what type of worker could use them. The underlying issue: Do you really need the top of the line to get the job done? My tests showed that these value models hold up pretty well for occasional mobile users and road warriors, whose main tasks are business- or office-oriented — such as word processing, spreadsheets, electronic mail and order inquiry and entry. These machines aren't the fastest, lightest or most capable, but they handle day-to-day business applications well.

I looked at two Compaq Computer Corp. models — the Armada 4131T and 1550DMT — Toshiba America Information Systems' Satellite 220CSD and IBM's ThinkPad 380D. For this price range, the standard amenities include the following: a minimum 133-MHz Pentium processor; 16M bytes of RAM; a 1.44M-byte floppy disk; a 1G-byte hard disk; a 12.1-in., diagonal, 800- by 600-pixel, 16-bit color LCD screen; a built-in microphone; a line input and line output/headphone jack; and two PC Card slots, with at least one being Zoom Video (ZV)-compatible.

For word processing, the usual spreadsheets, personal schedulers and databases, mobile order entry and even heavy E-mail applications, these machines fit the bill well.

Where they fall short is when you need speed and large resources, such as application development, multimedia development, computer-aided design and manufacturing and the likes. Running Microsoft Corp.'s Windows NT Workstation is questionable on some of these machines.

The largest barrier to running NT and many high-performance applications is memory. All of these units start with 16M bytes of RAM, enough for Windows 95 and a few applications at a time. But adding more memory covers a raft of underperformance sins, such as slow processors and hard disk drives.

The second potential barrier, which no amount of RAM can fix, is a stodgy, dual-scan, double-layer supertwist nematic display instead of the quick-drawing, active-matrix thin-film transistor (TFT) displays. Dual-scan displays can't keep up with video clips or animation. The motion picture blurs and distorts.

Also, a small mouse pointer becomes virtually invisible as it's moved. Although you can increase the pointer size and turn on mouse trails to increase visibility, nothing helps motion video on a dual-scan display. If it's important to display motion video, pick a model with a TFT display.

The other drawback to buying a midtier machine is that it will become outdated faster than more recent models. But if the future for the machine is to run Windows 95 or Memphis (the next version of Windows) business applications, the unit should have a healthy three- to four-year life span even if it's used as a hand-me-down within a company.

Value notebooks, page 62

OVERALL B+ GRADE

ARMADA 1550DMT
$2,999
COMPAQ COMPUTER CORP.
Houston
(800) 345-1518
www.compaq.com

VALUE NOTEBOOKS: HEY, NOT BAD!

CONTINUED FROM PAGE 81

ARMADA 1550DMT

Compaq's Armada 1550DMT packs a 133-MHz Pentium MMX processor — the only MMX bearer in this roundup. You also get 16M bytes of RAM (expandable to 80M bytes), a 10-speed CD-ROM drive, a 4M bit/sec. infrared port and a 33.6K bit/sec. fax modem built in to this 7.5-pound notebook. It costs $2,999.

The Armada also sports some differences. The 12.1-in. screen is an active-matrix display, which means there's no problem with multimedia. The Armada's pointer is a touchpad with a keyboard that has a light, shallow feel. Its adapter/charger is built-in, which means there's no bulky transformer to plug in to the wall.

You get two Cardbus-compatible PC Card slots, but only the bottom slot is ZV-enabled. The lithium ion battery runs for 2.5 to three hours. You can swap the floppy disk drive for a second lithium ion battery ($189) or a nickel metal hydride battery ($95, runs for approximately 2.5 hours) in the machine's multibay.

The machine's performance was slightly slower than the other machines. But because of technical reasons, we couldn't complete the PC World WorldBench benchmark tests on this machine.

The 1550DMT is a good all-in-one traveling notebook, but you also pay a lot. For running the usual business software suspects, this machine works well.

ARMADA 4131T

$2,799

COMPAQ COMPUTER CORP.
Houston
(800) 345-1518
www.compaq.com

OVERALL B GRADE

At $2,799, the Compaq Armada 4131T is like its older sibling, although its form factor is different (it has a lighter 6.1-pound, 2-in. thick body whose main battery acts as a handle) and easier to carry. You get a 133-MHz Pentium processor, the same amount of memory, the same touchpad pointer (although the buttons are different) and the same active-matrix display as the 1550DMT.

But this computer uses a 32-bit video controller — the rest use 64- or 128-bit controllers — and the display is slower. The two PC Card slots are Cardbus-compatible but not ZV-compatible. However, neither of our Cardbus network cards would fit into the slots. You can get up to nine hours of battery life by adding two additional lithium ion batteries ($189 each) in place of the floppy and multibay.

For its performance, the 4131T finished acceptably with a PC World WorldBench score of 155. This is average for 133-MHz notebooks and good enough for running most business applications.

The eight-speed CD-ROM drive is a $379 option, which means this machine won't qualify for our sub-$3,000 price if so equipped. Even without a CD-ROM drive, the machine is a good business performer.

OVERALL B- GRADE

THINKPAD 380D

$2,495

IBM
Armonk, N.Y.
(800) 426-3333
www.ibm.com

The IBM ThinkPad 380D is definitely more than a "been-there, done-that" notebook. At $2,495, it packs a full array of features into its 7.2-pound body, but it also shows why a dual-scan display can be distracting.

The machine sports a 150-MHz Pentium processor, 16M bytes of RAM (expandable to 128M bytes) and a slimline 1.44M-byte floppy/eight-speed CD-ROM drive combination that fits into the right side of the machine in the same space as a normal portable CD-ROM unit. You also get a 4M-byte infrared port and a 33.6K bit/sec. PC Card fax modem for its dual PC Card slots.

Although IBM claims the PC Card slots are 32-bit, we couldn't use either of our Cardbus-compatible 3Com Corp. or Xircom, Inc. network PC Cards. The edge of Cardbus cards, which is slightly different from standard PC Cards, won't plug in to the sockets.

The 380D's keyboard has the best feel, and the machine has the comfortable eraser-head Trackpoint pointer and pointer-button layout. The lithium ion battery runs for about two to three hours; a spare battery costs $259.

A minor downside to the ThinkPad is its 12.1-in. dual-scan display. If you use the initial Windows setup, the mouse cursor is often invisible. Turning on mouse trails and expanding the pointer size helps significantly. Like the Toshiba 220CSD, however, this screen can't handle motion video. You should get a model that has an active-matrix display if this is important.

The ThinkPad's PC World WorldBench score was 164, just slightly better than the other machines, and confirms that the 380D is a good choice to handle standard business applications.

OVERALL A- GRADE

TOSHIBA SATELLITE 220CSD

$1,995

TOSHIBA AMERICA INFORMATION SYSTEMS
Irvine, Calif.
(800) 334-3445
www.toshiba.com

At $1,999, the Toshiba Satellite 220CSD is the least expensive machine in this roundup. With all the features wrapped into a 7.2-pound box, the machine was also the most capable for ordinary business use.

The 220CSD sports a 133-MHz Pentium, 16M bytes of RAM that's expandable to 144M bytes, a 10-speed CD-ROM drive, a 4M bit/sec. infrared port for printing and linking to a desktop/network and a pair of PC Card slots that support the 32-bit Cardbus and the ZV standards. The 220CSD is the only portable in this group that offers a universal serial bus port.

When tested, the single lithium ion battery lasted 2.5 to three hours. You can double the operating time by duplicating the built-in battery ($219) or using a battery designed for the machine's multibay (the same bay that holds the floppy or CD-ROM drive) for $269.

Although the 220CSD comes with software for playing MPEG-1 titles, the machine's dual-scan display doesn't handle motion video well. For normal business use, the unit performs well. For that matter, its PC World WorldBench score of 156 (typical, but not blazing for 133-MHz machines) shows the Satellite could fit most business user needs. But if you need to show motion video on the portable's display, find another Satellite model.

DeVoney is a freelance writer in Seattle. He can be reached at chrisd@cybercritic.com.

In Depth

Red ALERT

BY GARY H. ANTHES

Sept. 17, 1995. A powerful earthquake centered near New Madrid, Mo., rocks the southeastern part of that state, killing or injuring hundreds of people, cutting off communications to the area and leaving roads and bridges impassable.

A fractured road causes a military truck carrying chemical munitions to the Pine Bluff, Ark., arsenal to overturn, dispersing its payload over a wide area. Thousands in the region are left without shelter, food, water or medical supplies.

But technology-enabled local, state and federal officials launch a response within minutes.

- Crisis managers activate the Government Emergency Telecommunications Service, which gives emergency workers priority on jammed telephone circuits.
- They activate a satellite communications service run by NASA and tied in to a commercial mobile data network.
- A state trooper identifies the spilled chemical using a database of chemical hazards on his portable PC. He reports his findings via wireless electronic mail to an emergency operations center in Conway, Ark.
- At the center, a computer model predicts the spread of the chemical hazard and helps plan evacuation and cleanup.
- Crisis managers across the country share maps, weather data and other information over an "emergency information network" — a secure subnetwork on the Internet that uses World Wide Web technology.

The good news is that this earthquake never happened. It was part of an exercise conducted by federal, state and local agencies.

The bad news is that, had it been a real emergency, response wouldn't have been nearly as fast and effective.

Indeed, the history of hurricanes, earthquakes, terrorist bombings and other disasters in the U.S. shows a pattern of slow response and poorly coordinated activities.

An integrated crisis management system is available for use by military forces, but nothing comparable exists to support civilian emergency response. The result, experts say, is unwarranted loss of life, limb and property, and recovery costs far higher than necessary.

And experts worry that the U.S. is especially ill-equipped to handle very large disasters. In October, a group will test an Internet-based "extreme information infrastructure" intended to provide communications during catastrophes such as a nuclear explosion (see story, page 84).

"Crisis management is extremely manual right now," says Vinton Cerf, a co-author of *Computing and Communications in the Extreme*, a report on crisis management from the National Research Council (NRC) in Washington. And the computer and communications systems that do exist lack interoperability among the myriad federal, state and local emergency response agencies.

Crisis management systems are improving, but not fast enough. Lives and property are at stake.

"The police guy can't talk to the fireman, and the fireman can't talk to the emergency helicopter and so on. There are a bunch of places where you find disparities," says Cerf, who is one of the originators of the Internet and a senior vice president at MCI Communications Corp. in Washington.

An official at the Federal Bu-

Red alert, page 84

FPG INTERNATIONAL

CAD software helped in the search-and-rescue operations at the bombed Murrah Federal Building in Oklahoma City

Problems

Impediments to emergency response

- Inadequate voice service
- Congested wireline and wireless services
- Unknown radio frequencies in use by relief organizations
- Limited access to remote information and limited information sharing among organizations
- Lack of E-mail capability between local users and regional offices
- Slow setup of telecommunications facilities at crisis scenes

Solutions

Capabilities needing research and development

- Self-configuring wireless data networks
- Adaptive networks that discover and react to damage and changes in use
- "Judgment support" tools drawing on data from diverse and unanticipated sources
- Remotely accessible "metacomputer" systems for modeling and simulation
- Multimedia fusion of data from varied, unexpected sources
- Distributed, virtual crisis-management "anchor desks"
- Adaptive interfaces that analyze use and signal when crisis managers make errors
- More flexible and powerful geographic information systems

Source: National Research Council, Washington

Red ALERT

CONTINUED FROM PAGE 83

reau of Investigation who asked not to be named gives this description of the immediate aftermath of the 1993 World Trade Center bombing in New York: "All the power was gone. There were at least eight [emergency response] agencies in that building, and we couldn't communicate with any of them. Had there been any shooting or a subsequent bombing, we would have been up the creek."

SUPPORT ON THE WAY

Several initiatives are under way to achieve the kind of integrated and automated support for emergency response tested in the earthquake exercise described earlier. In its report last year, the NRC outlined several promising — albeit piecemeal — initiatives.

For example, the Government Emergency Telecommunications Service was set up in 1995 to give emergency workers access to a special telephone circuit when normal channels are choked. It facilitated voice communications following the 1995 bombing of the Alfred P. Murrah Federal Building in Oklahoma City and during the recent floods in Louisiana.

But the service can't yet secure priority access to cellular phone circuits, which are often jammed during a crisis.

Computer-aided design software helped in the search-and-rescue operations in Oklahoma City. It mapped locations to be searched and estimated where victims might be based on the location of their offices.

But NRC officials say that if more computational power had been available, the CAD data could have been used in a model to estimate loads on various parts of the building to show where shoring was needed.

Hurricane Marilyn struck the Virgin Islands in September 1995 and wiped out all communications with the mainland. Just before the storm hit, the U.S. Army set up a PC that contained crisis-management software and a communications package that linked with the Inmarsat satellite communications service. In the first 24 hours after the storm, all official calls passed through that link. But there weren't enough channels available to meet demand.

Hurricane Andrew destroyed much of the phone service south of Miami in August 1992. The American Red Cross was able to communicate via an experimental wireless cellular network that used IBM laptops fitted with radio modems.

But response to Hurricane Andrew was slowed by the inability to access proprietary databases. The Federal Emergency Management Agency (FEMA) couldn't get needed information from Dade County, Fla., until it paid the county for the data and convinced it that privacy could be protected.

FEMA directs the emergency response activities of 26 federal agencies and coordinates with numerous state and local authorities and volunteer groups. Often, information sharing is relegated to mail, fax and phone.

"The compatibility of their systems varies greatly," says Bruce Boughman, FEMA's director of operations and planning. "For example, the state of California uses Mac-based systems, which makes it very difficult to share products with them."

Interoperability is a problem even within response organizations. For example, the Red Cross maintains a database of 19,000 experts and volunteers ready to respond to emergencies, but it isn't linked to systems at state and local Red Cross offices, which must communicate via fax and phone.

The Red Cross and FEMA are replacing their old emergency response applications with new systems that are scalable, flexible and network-enabled. FEMA officials say the agency is spending $67 million over five years to replace its stand-alone, 1980s-era systems.

But those application-level efforts don't address underlying network deficiencies. "The communications infrastructure is more fragile than people like to accept," Cerf says. "And it gets even more complicated when we try to put together a new system built on the pieces that are still surviving."

What's needed, Cerf says, are self-configuring networks that adapt to damage and automatically discover new links after a crisis begins. "For example, you'd like to be able to turn your computer on and have it sample the radio spectrum and discover what transmission resources are out there," he says.

FEC INTERNATIONAL

When Hurricane Andrew hit Florida in 1992, FEMA couldn't access needed information from Dade County until it paid for the data and convinced local officials that privacy could be protected

It isn't easy today to bring radio gear, phone switches and computers into a crisis area and get them online quickly. "What's missing is a set of procedures and protocols that would allow systems to discover each other and assemble themselves into a communications network," Cerf says.

Some of those capabilities may be provided by the new Mobile Internet Protocol, he added.

But crisis managers understandably view new technology with some apprehension. Bob Canfield, head of Los Angeles' Emergency Preparedness Division, says, "We want to take advantage of technology. But as an operational person, I know that it will fail at the most inopportune time." □

Anthes is Computerworld's senior editor, special reports. His Internet address is gary_anthes@cw.com.

Extreme information

During the 1960s and '70s, U.S. telecommunications companies and public utilities were encouraged to build redundant facilities to guard against military attacks. But with the Cold War over and deregulation all the rage, those organizations no longer see survivability as the high priority it once was, says John Hwang, general manager of information technology for Los Angeles.

"Sheer competition is driving these companies to skinny down," Hwang says. "I am very worried that we do not have an information infrastructure able to take care of the extreme cases."

If the public phone network were wiped out in an emergency, police and firefighting units could in theory use "tactical" communications systems based on radio, satellites and the like, says Hwang, the former director of IT at FEMA. "But do we really know how to operate in that kind of environment? We are talking about a *lot* of coordination, a *lot* of collaboration."

That kind of coordination will be put to the test this October when a coalition of government and private organizations try out the "extreme information infrastructure," or XII. The XII will be a secure, survivable intranet that takes input from fixed users, mobile wireless users and sensors and creates a database of crisis information accessible in Web format.

The XII will be tested in a scenario in which terrorists start a fire near Bedford, Mass. The fire diverts emergency personnel while elsewhere a toxic plume of nerve gas drifts toward Boston. The gas incapacitates the crews on ships in Boston Harbor, causing them to crash into piers, according to Lois Clark McCoy, president of the National Institute for Urban Search and Rescue and an organizer of the exercise.

Information about the spread of the gas will be transmitted over the XII from sensors at an actual detonation at Camp Lejeune, N.C. "We are not exploding anything in Boston," McCoy says. — Gary H. Anthes

IT Careers

ON YOUR Best Behavior

BY ROCHELLE GARNER

TOM GARRETT

Hiring managers use the behavioral interview to probe whether an IS job candidate will "fit in." But two can play at this game

Looking for a better job? More money? More respect? Then get ready to move to new digs. Because when it comes to making big career changes, most people find that the best opportunities are found at a different company.

For today's information systems professional, that means impressing them at an interview with your leadership skills, team playing and business knowledge. What's more, interviewers expect you to prove it. Their tool is the behavioral interview.

Designed to probe for a candidate's softer talents, the behavioral interview has become the rage among organizations that are struggling to fill positions that require technical and human skills in nearly equal parts. In fact, the behavioral interview methodology specifies 21 "softer" skills that its proponents probe for.

"I look for skills in teamwork, leadership, innovation, flexibility and communication," says Marty Chuck, worldwide field information technology manager at Hewlett-Packard Co.'s test and measurement organization.

"Behavioral interviewing is based on the premise that the past is the best indicator of the future," Chuck says. "Before I was trained in this, I would just ask a bunch of questions but not really delve into what people have done or [ask them to] show me how they've done it. With behavioral interviewing, I always get to that second level of questioning, to see if the candidate is answering with buzzwords or with a black belt."

No wonder companies make candidates jump through those interviewing hoops. And they can be hoops. The hallmark of behavioral interviewing is to elicit from technologists real-life experiences that illustrate less-tangible talents, such as leadership or commitment.

No one-sentence answers allowed. That can be daunting, for sure.

But look at it this way: In the behavioral interview, employers can finally view you as more than just a technical resume. Titles don't matter. It's what's inside that counts.

Properly armed, you can more than survive the behavioral interview. You can thrive. The key lies in how you answer. □

Garner is a freelance writer in San Carlos, Calif.

Your best foot forward

It's the first rule of surviving the behavioral interview: Be prepared. But in this case, the good scout comes to the interview with a diary of sorts. Don't focus on your technology skills and projects. Instead, detail the ways in which you've dealt with a difficult team member or user, went the extra step to deliver customer support or provided a project leadership role. How you present that example also matters, says Paul Green, who developed behavioral interviewing 20 years ago.

Now CEO and president of Behavioral Technology, Inc. in Memphis, Green has taught companies such as Intel Corp., HP, Electronic Data Systems Corp. and Motorola, Inc. the specific techniques and procedures to use when interviewing. His book, *Get Hired!* (Bard Press, Austin, Texas) tells readers how to "ace the interview."

What's important to remember is that everyone has experiences they can tap in to for the behavioral interview. Think about how you've applied your technical expertise to a bigger picture. So if you're asked to list the most advanced programming language you know, show how you applied it to solve a support problem, say, or to help your work team reach a decision. But whatever you do, don't wing it on the day of the interview. "Do not create false stories," says Mike Ray, senior staff consultant at Intel Corp. in Santa Clara, Calif., who teaches behavioral techniques to the company's IS recruiters. "The interviewer will pick that up right away."

And that's survival rule No. 2: Never lie. "Honesty is always the best policy," Ray says. "That's just as true when you're asked about negative situations, where something didn't turn out right for you. This is not a place to make yourself look good by casting blame on others. Instead, put things in a positive light by showing what you learned from the experience."

Which brings us to the third rule of survival: Don't go overboard listing your faults, Green says.

— Rochelle Garner

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REGIONAL SCOPE

Minneapolis, St. Paul

Minneapolis (above) and St. Paul both boast low cost of living and high quality of life, but they still go begging for IS talent

TALE *of* TWIN CITIES

The winters may be near-legendary for their duration and severity, but the economy of Minnesota's Twin Cities of Minneapolis and St. Paul has been positively balmy the past few years. Industries from food packaging to transportation are humming along, and there is a small but growing high-technology and software component.

Even with a low cost of living, many amenities of big-city life and what supposedly are the shortest average commutes of any major metropolitan area in the nation, Twin Cities employers still go begging for information systems talent. In fact, a shortage of skilled labor — the area's unemployment rate is a mere 2.7% — is about the only thing holding back even more dramatic increases in economic activity. Here's a look at what each city's job market offers IS professionals. *By William Spain*

MINNEAPOLIS

MARKET SUMMARY:
America in microcosm, Minneapolis has as diversified an economic base as any city in the country. Along with the usual Midwestern lineup of banking and insurance interests, Minneapolis is home to grain giant Cargill, Inc., retailer Dayton Hudson Corp., food processor Pillsbury Co. and Carlson Cos.' travel/hospitality empire. In addition, health care, high-tech and defense industries play key roles in the city's financial outlook. Many of the city's larger concerns continue to rely to some degree on mainframe technology, but client/server is catching up fast.

TOP CLIENT/SERVER SKILLS:
Lots of application development, migration and support. Relational databases, object-oriented programmers and Oracle are also in high demand.

TOP MAINFRAME SKILLS:
DB2, AS/400, Cobol and MVS top the list; all forms of maintenance and migration. Many legacy systems still exist.

BUSINESS CULTURE:
Some of the country's most progressive employers uphold a solid heartland work environment. Even the more buttoned-down cultures frequently are softened for IS personnel. "We have added a whole group of new benefits, [including] five-day casual, flexible work arrangements and compressed workweeks that are exclusive to IS," says Paul Dominski, manager of team human resources at Dayton Hudson's corporate IS division.

QUALITY OF LIFE:
Housing costs are relatively low for such an urbanized area. The school system is well-regarded, the crime rate is low, and traffic is still pretty smooth. And, residents are proud of their vibrant art and culture scene. Dominski, a transplant, calls the quality of life "outstanding. And Minneapolis is much more cosmopolitan than I ever imagined."

MONEY MATTERS:
Per capita personal income in the Twin Cities was already high before the recent economic boom. In 1993 it stood at $24,145 and has been growing steadily. Salaries, according to Bill Lanctot, a partner at recruiter Corporate Resources, Inc., "are really pushing the ceiling." The basement level for IS personnel is $40,000 and rising, he says.

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ST. PAUL

MARKET SUMMARY:
The state capital may be the older of the two cities, but its economy in many ways mirrors that of its twin across the river. The industrial base is diverse and dynamic, and the city is home to a number of classic U.S. companies, including Land O'Lakes Creameries, Inc., Northwest Airlines and Minnesota Mining and Manufacturing — now known as 3M.

TOP CLIENT/SERVER SKILLS:
Java, C++, Visual Basic, PowerBuilder, Oracle and Sybase; virtually all client/server application and development skills are in high demand.

TOP MAINFRAME SKILLS:
DB2, AS/400 and Cobol. Many of the larger concerns still use mainframe technology, and although conversion to client/server is increasing, hiring managers say the need for mainframe maintenance should continue for some time.

BUSINESS CULTURE:
Although St. Paul's picture could appear next to "Protestant ethic" in the dictionary, the overall labor shortage has prompted even many of the older, more conservative corporate cultures to gradually ease up on dress codes and other Midwestern traditions to attract the people they need.

QUALITY OF LIFE:
It's an outdoorsman's paradise, with pristine lakes and forests within short driving distance. A superior school system is a point of local pride, as are museums and other cultural attractions. The Twin Cities reportedly have more arts organizations per capita than anywhere in the country. Kim Downey, a recruiter at ESP Systems Professionals, Inc., says, "you can have a country house that is only a 30-minute drive away from town."

MONEY MATTERS:
Salaries are rising with the economic tide. Downey says the starting salary for a client/server developer with C++, Java or graphical user interface skills is about $35,000 per year. But someone with two years of experience will get $40,000 to $50,000, and someone with three to seven years' experience will earn $60,000 to $100,000. Management positions in client/server development can range "up to as much as $200,000," she says.

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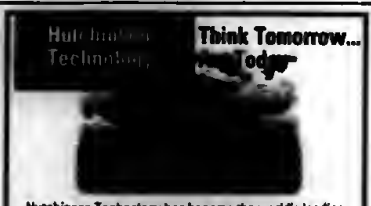

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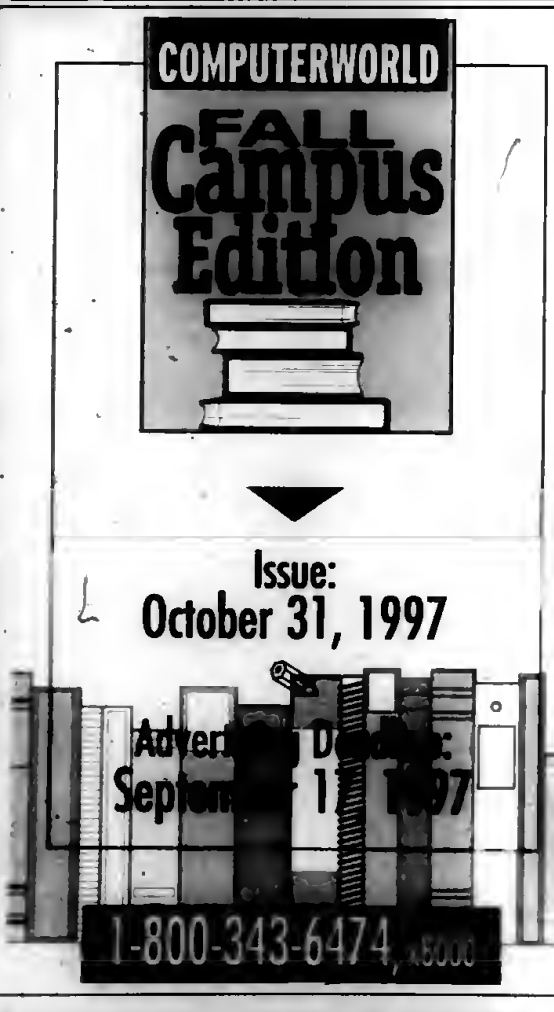

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City of Minneapolis

CHIEF INFORMATION OFFICER

*In 1992, the **City of Minneapolis** embarked upon a strategic, 10 year, multi-million dollar initiative to overhaul existing information systems within the City, to expand and update the City's technology infrastructure, and to update the value and quality of information resources. Now, well into the 5th successful year of this process, we are seeking a successor to our Chief Information Officer of 5 years to carry the vision forward into the new millennium. This essential position, which supports a broad diversity of mission critical applications and functions is involved with almost every major Citywide change initiative from its inception. The CIO will develop, articulate, and oversee the implementation and education of the vision and direction for information and telecommunication services for the City into the future.*

This position reports directly to the City Coordinator and also functions as an Assistant City Coordinator. This seasoned and effective manager will possess 8 - 10 years experience in managing a large data processing facility with a Bachelors degree in Computer Science, Management, Engineering or Public Administration. A Masters degree is preferred. The qualified applicant will demonstrate a strategic vision coupled with the ability to understand and interpret the information needs of a diverse constituency. This individual will be able to lead the design, installation, and operation of the City's information architecture. Outstanding communication skills, interpersonal skills, and demonstrated customer service orientation are essential.

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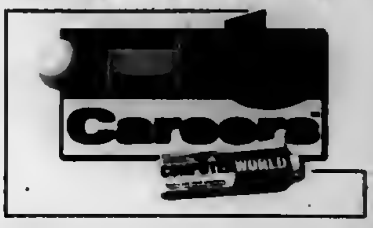

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Software Engineer Design and development of Visual Basic like product on UNIX. Port custom control development architecture onto UNIX, integrate language engine, custom control architecture, and develop product's design workbench. Demonstrated ability to port GUI based software to cross platform using standards such as Xlib, Xt, Motif, Windows SDK. Demonstrated ability with various UNIX platforms such as Sun-OS, Solaris 2.4, 2.5, IBM AIX, SCO UNIX. Demonstrated ability to Visual Basic custom control architecture, OLE custom controls, and scripting. $65,000/yr 40 hr/wk 9 a.m. - 5 p.m. Must have 2 yrs exp and B.S. Comp Sci Elect/Mech Eng. rel. field/equiv. Send 2 resumes: Case #70464, P.O. Box 6968, Boston, MA 02114.

Software Engineer Design and development of a Visual Basic like graphical user interface building tool on UNIX platforms. Port and integrate using BASIC scripting language and engine to UNIX. Port Custom Control architecture engine to develop applications workbench. Must have demonstrated ability in Cross platform software; demonstrated ability on UNIX platforms such as Sun-SPARC, HP9000, IBM RS6000, SCO and their operating systems, demonstrated ability to work in different GUI standards as Xlib, Xt, Motif, Windows SDK, demonstrated ability in Visual Basic and general language scripting concepts and custom control architecture demonstrated ability in Object Oriented Programming. $60,000/yr 40hr/wk, 8 a.m. - 5 p.m. Must have 2 yrs exp and B.S. Comp. Eng. rel. field/equiv. Send 2 resumes: Case #70467, P.O. Box 6968, Boston, MA 02114.

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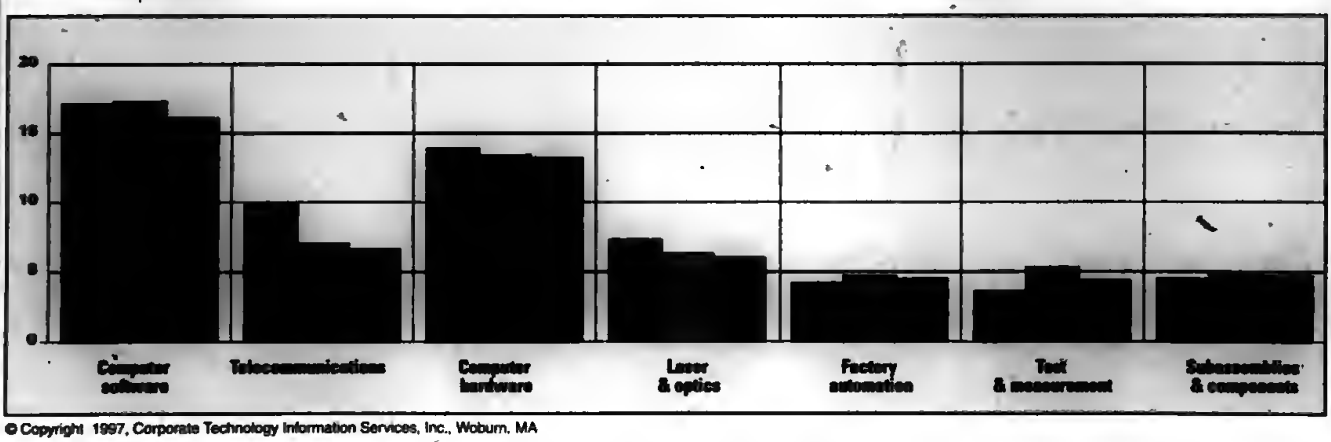

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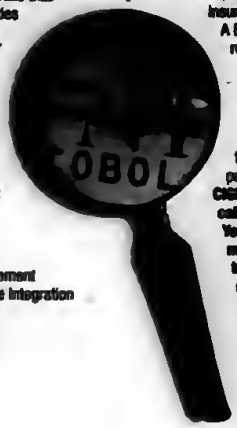

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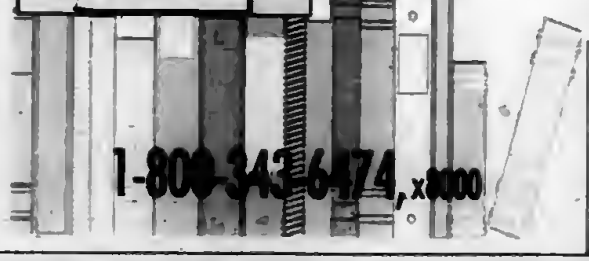

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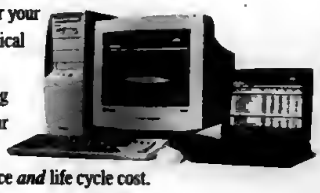

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Computerworld Headquarters: 500 Old Connecticut Path, P.O Box 9171 Framingham, MA 01701-9171
Phone: 508-879-0700, FAX. 508-879-0446

NORTHEAST

Director: Isabelle Kane, District Manager: Laurie Marinone, Sales Office Coordinator: Tammy Boisvert, Sales Associates: Karen Beasley, Dianne McNiel, Cheryl Stratton, 470 Totten Pond Rd., 5th Floor, Waltham, MA 02154 (508) 879-0700 FAX: (617) 890-2669 Hearing Impaired: (800) 428-8244

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ADVERTISING OPERATIONS

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Boston: Director of Publishing Services/Carolyn Medeiros, Project Coordinator/Heidi Broadley, Managing Editor/Peter Bochner, Graphic Designer/Gail Varney, 500 Old Connecticut Path, Box 9171, Framingham, MA 01701-9171 (508) 879-0700 FAX: (508) 875-6310

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Internet Careers Site: Jennifer Arispe, Sales Associate, 500 Old Connecticut Path, Framingham, MA 01701-9171 (800) 343-6474

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The Week in Stocks

Gainers

PERCENT

Interleaf Inc. 55.6
Banyan Systems Inc. 45.0
Amazon.com 27.4
Ascend Communications 22.3
IPL Systems Inc. 18.7
Boole and Babbage 19.9
CompUSA Inc. 15.5
Standard Microsystems Corp. 14.8

DOLLAR

Ascend Communications 8.84
Compaq Computer Corp. 8.63
Northern Telecom Ltd.(H) 7.81
America On-Line 6.75
Amazon.com 4.94
McAfee Associates 4.86
Dell Computer Corp. 4.44
Newbridge Networks Corp.(H) 4.25

Losers

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INDUSTRY ALMANAC

CA out of the mire

Software giant Computer Associates International, Inc. (NYSE:CA) has spent this year digging out from the rubble of failed expectations.

Last December, the Islandia, N.Y., firm said it wouldn't meet quarterly earnings projections because of slack European sales of its client/server software products [CW, Jan. 6]. Wall Street responded by hammering CA shares 21%.

But stronger fourth-quarter client/server sales and the roll-out of the newest version of CA's flagship Unicenter systems management software have restored investor faith and given share prices a boost (see chart).

Unicenter also has been certified for use with Microsoft Corp.'s Back Office productivity suite, giving CA a strong presence in the growing Windows NT marketplace.

But to keep up this growth, CA must solve the problems of sales and marketing. That's because the market for Unicenter is still largely untapped, analysts say, as CA makes the transition from mainframe systems management to the more complex and growing distributed systems world. Right now, about 40% of CA's sales is in client/server systems. That figure is expected to slowly but surely increase, as is the value of CA stock.

"If you are already dominant in a small but mature market [such as mainframe software] and you understand the issues in a larger, immature market, then you are in pretty good shape even if it takes some time," said Paul Dravis, an investment analyst at Robertson Stephens & Co. in San Francisco. Dravis has a Buy rating on CA shares.

CA is addressing the sales issue by retraining its European sales force in the benefits of client/server. It will also add 300 salespeople to its 1,000-person North American sales force.

— Tim Ouellette

CA REBUILDS ON WALL STREET

Computer Associates has seen its stock shares slowly climb back up

Exch	52-Week Range			July 3 Price	Wk Net Change	Wk Pct Change
COMS	91.38	24.00	3COM Corp	47.00	1.56	3.4
AIT	71.75	49.63	Ameritech Corp	40.00	1.25	1.0
ASND	30.25	36.13	Ascend Communications	40.00	0.00	22.5
T	42.63	30.75	AT&T	36.00	0.31	0.9
BNYN	7.00	1.19	Banyan Systems Inc.	2.00	0.88	45.0
BAY	30.63	15.38	Bay Networks Inc	27.38	0.06	5.6
BEL	75.25	95.13	Bell Atlantic Corp.	75.56	1.81	2.5
BLS	48.63	35.25	BellSouth Corp	45.63	1.63	3.0
BRKT	42.25	9.25	Brooktrout Technology (L)	10.89	-2.38	18.0
CS	48.00	48.00	Cabletron Systems	36.00	1.19	4.0
CSCC	91.25	23.50	Cascade Communications	27.00	-0.35	1.4
CGRM	17.00	8.63	Contigram Communications	53.50	6.00	2.0
CSCO	75.75	44.75	Cisco Systems Inc.	71.56	3.31	0.3
CMNT	0.00	3.88	Computer Network Tech	4.13	-0.75	15.4
DIGI	33.13	13.63	DSC Communications	22.00	-0.00	-2.5
FORE	43.63	10.00	FORE Systems Inc.	14.94	1.31	9.6
GDC	14.88	8.03	General DataComm Inds.	4.00	-0.19	2.4
GSN	46.75	36.13	General Signal Networks	40.03	2.63	0.0
GTE	48.00	37.75	GTE Corp	45.50	1.38	9.6
LU	75.04	30.63	Lucent Tech (H)	75.38	3.00	4.3
MADGF	10.13	4.38	Madge Networks NV	6.13	-0.25	-3.9
MCIC	42.38	22.50	MCI Communications Corp	40.38	3.25	8.3
NETM	19.50	2.50	NetManage Inc.	2.91	0.00	3.3
NTRX	10.63	1.44	Netrix Corp	2.13	-0.25	-10.5
NCDI	30.25	6.00	Network Computing Devices	10.00	-0.00	-4.3
NWK	31.75	11.13	Network Equipment Tech.	17.01	0.03	3.8
NETG	30.25	11.13	Network General (L)	13.58	-0.25	-1.8
NN	47.00	20.25	Newbridge Networks Corp. (H)	47.25	4.25	8.0
NT	20.38	45.00	Northern Telecom Ltd. (H)	96.50	1.81	0.8
NOVL	14.00	6.28	Novell Inc. (L)	7.34	0.41	0.0
NYN	48.00	43.00	Nynex Corp	37.63	1.50	2.7
OCTL	31.75	13.50	Octel Communications Corp.	33.19	1.81	0.8
ODSI	24.25	9.75	Optical Data Systems Inc.	13.38	1.50	12.5
PCTL	47.25	8.25	PictureTel Corp	9.00	-1.75	-11.2
PTON	4.25	1.31	Proteon Inc	1.00	-0.19	-10.0
RACO	0.08	2.13	Racotek Inc.	2.19	6.00	2.5
RETX	0.13	1.38	Retix	3.00	-0.11	-2.4
SBC	61.00	46.00	SBC Communications (H)	61.63	1.75	2.9
SFA	25.38	10.00	Scientific Atlanta Inc.	21.00	-0.00	-2.5
SHVA	23.50	8.25	Shiva Corp	10.75	-0.00	-0.6
FON	52.75	34.50	Sprint Corp	52.19	0.50	1.1
SMSC	15.25	6.25	Standard Microsystems Corp	10.19	1.31	14.8
USW	30.00	37.33	US West Inc	38.00	2.00	5.6
XIRC	31.15	7.38	Xircom	12.00	-0.25	-2.0
XYLN	59.38	13.38	Xylan Corp	30.28	1.00	13.0

Exch	52-Week Range			July 3 Price	Wk Net Change	Wk Pct Change
AALR	15.00	6.13	Advanced Logic Research	11.50	0.38	0.4
AAPL	27.75	13.00	Apple Computer Inc. (L)	11.00	-0.94	-6.4
ASTA	7.15	3.94	AST Research Inc.	5.13	-0.00	1.2
CPQ	110.38	40.50	Compaq Computer Corp	108.75	8.63	8.0
DELL	123.90	20.25	Dell Computer Corp	122.38	4.44	3.8
GTW	37.75	10.68	Gateway 2000 Inc.	53.38	0.19	0.6
HWP	60.00	37.75	Hewlett Packard Co.	56.38	1.19	2.2
MUEI	25.38	6.75	Micron Electronics Inc.	17.11	-0.16	-3.9
NIPNY	74.00	49.00	NEC America	80.38	3.88	-5.3
SGI	28.38	12.63	Silicon Graphics	17.00	1.00	9.7
SUNW	38.25	22.50	Sun Microsystems Inc.	37.13	0.13	0.3

Exch	52-Week Range			July 3 Price	Wk Net Change	Wk Pct Change
AMH	14.00	8.13	Amdahl Corp	10.00	1.13	12.6
DGN	40.75	9.00	Data General Corp	30.38	-0.13	-0.5
DEC	42.80	25.00	Digital Equipment Corp	40.56	0.00	1.4
IBM	94.00	44.63	IBM	94.00	2.94	3.2
MDCD	0.75	0.85	Meridian Data Inc.	4.51	0.00	1.5
NETF	4.50	6.00	NetFrame	0.0	0.00	0.0
SQNT	21.00	10.00	Sequent Computer Sys.	21.50	-0.25	1.2
TEXM	9.00	1.38	Sequoia Systems Inc.	3.38	0.50	0.6
SRA	50.63	16.63	Stratus Computer Inc. (H)	35.00	6.88	0.0
TDM	22.13	8.65	Tandem Computers Inc.	22.11	1.88	9.3
UIS	8.00	3.00	Unisys Corp	7.63	0.00	0.0

Exch	52-Week Range			July 3 Price	Wk Net Change	Wk Pct Change
ADBE	18.00	28.50	Adobe Systems Inc.	37.13	1.62	4.6
AMSWA	2.75	3.75	American Software Inc.	7.38	-0.31	-4.0
APLX	40.00	3.13	Applix Inc.	7.00	-0.44	3.6
ARSW	62.50	17.00	Arbor Software	54.00	2.63	0.1
ADSK	40.00	18.00	Autodesk Inc	38.75	-0.25	-0.6
BGSS	32.50	10.50	BGS Systems Inc	49.00	1.00	3.9
BMCS	58.63	25.38	BMC Software Inc.	53.00	0.00	0.0
BOOL	27.38	14.00	Boole and Babbage	25.50	1.38	19.9
BORL	0.13	4.75	Borland Int'l Inc.	6.75	0.00	0.0
BOBJY	38.38	7.23	Business Objects	9.19	-0.00	-0.3
CAYN	1.13	3.38	Cayenne Software Inc	3.25	-0.25	-7.1
CNTR	1.00	1.13	Centura Software	2.00	-0.03	-3.5
COGNF	39.50	18.25	Cognos Inc.	30.63	0.88	2.8
CA	67.00	37.25	Computer Associates	31.38	3.00	0.0
CVN	10.33	3.13	Computervision Corp	6.00	-0.25	-5.8
CPWR	50.75	16.13	Compuware Corp.	47.00	1.38	0.0
CSRE	31.00	00.75	Comshare Inc.	20.38	0.00	0.0
COSFF	10.75	5.00	Corel Corp.	6.89	0.31	4.9
DWTI	0.00	3.63	Datawave Technologies Inc.	2.34	9.00	0.0
FILE	00.50	9.50	FileNet Corp	16.19	1.09	11.6
FRTE	56.25	6.25	Forte Software	12.61	0.00	3.1
FTPS	9.50	6.19	FTP Software Inc.	4.31	-0.19	-4.2
HUMCF	35.00	22.00	Hummingbird Comm. Ltd.	28.13	-0.88	3.2
HYSW	20.38	16.00	Hyperion Software Corp.	21.38	0.08	14.1
IRIC	16.38	11.00	Information Resources	14.25	0.00	0.0
IFMX	31.13	6.00	Informix Corp	8.31	-0.19	-2.0
INGR	11.00	6.25	Intergraph Corp	3.50	0.31	1.3
LEAF	3.63	0.01	Interleaf Inc.	1.75	8.63	15.6
ISLI	11.15	6.25	Intersolv Inc.	6.29	0.25	3.8
INTU	00.50	20.00	Intuit Inc.	28.13	1.38	0.0
TLC	23.75	5.50	Learning Co. (The)	9.50	0.13	1.6
LGWX	16.25	4.13	Logic Works	6.25	6.50	8.7
MAPS	16.50	7.88	MapInfo Corp	10.50	0.63	0.0
MATH	7.63	3.19	MathSoft	3.40	0.44	14.6
MCAF	70.00	27.68	McAfee Associates	00.63	4.86	7.9
MENT	10.19	6.30	Mentor Graphics	0.75	-0.78	-2.1
MIFCY	31.50	6.25	Micro Focus	00.00	0.85	1.7
MCRI	15.13	6.00	Micrografx Inc	6.00	-0.88	-12.1
MSFT	134.94	53.75	Microsoft Corp.	129.56	0.94	0.7
ORCL	53.38	33.25	Oracle Corp.	49.75	-1.38	-2.4
PMTC	64.25	34.88	Parametric Technology	40.38	-2.30	-5.6
PARQ	0.63	6.38	ParcPlace Systems Inc.	1.00	-0.13	-11.1
PSFT	48.00	28.25	PeopleSoft (H)	56.75	0.75	1.3
PTEC	19.75	11.50	Phoenix Technologies	13.03	-0.11	-0.9
PSQL	16.25	0.88	Platinum Software	31.31	1.50	10.4
PLAT	17.50	0.85	Platinum Technology	10.00	5.38	0.0
PRGS	22.00	12.13	Progress Software Corp.	18.50	-0.00	-0.2
RNBO	32.13	13.75	Rainbow Technologies Inc	18.63	0.63	3.5
REDB	15.63	0.00	Red Brick Systems Inc.	6.63	-0.25	-3.6
SAPE	60.75	29.75	Sapient Corp	40.50	1.00	2.5
SCOC	8.63	5.13	SCO Inc. (L)	3.00	0.25	6.9
SDTI	48.38	21.50	Security Dynamics Tech.	35.03	-0.25	-0.7
SOTA	18.88	0.85	State of the Art	11.00	0.50	0.0

Exch	52-Week Range			July 3 Price	Wk Net Change	Wk Pct Change
SSW	78.00	27.50	Sterling Software Inc.	31.75	0.63	2.0
SDRC	27.63	13.00	Structural Dynamics Research	27.50	1.00	7.3
SYBS	31.13	13.13	Sybase Inc.	12.50	-3.31	-73.0
SYMC	20.44	6.25	Symantec Corp.	15.44	-0.06	-0.5
SNPS	40.00	41.75	SynOptics	40.38	6.25	0.7
SSAX	17.38	3.00	System Software Assoc.	3.63	0.00	0.0
SYSF	16.50	7.38	Systemsoft Corp	10.50	0.13	1.3
TRUV	9.00	1.00	Truevision Corp	1.33	-0.36	-30.3
VIEW	17.00	9.00	ViewLogic Systems	14.00	0.13	0.8
VMRK	11.13	3.30	VMark Software Inc	9.00	0.15	1.6
WALK	79.63	0.05	Walker Interactive Systems	14.38	0.75	3.5
WALL	25.13	11.33	Wall Data Inc.	25.00	-0.35	-0.0
WANG	24.00	15.38	Wang Laboratories Inc.	21.81	0.94	0.1

Exch	52-Week Range			July 3 Price	Wk Net Change	Wk Pct Change
AMZN	80.00	13.75	Amazon.com	22.94	4.94	37.0
AOL	62.50	22.38	America On-Line	40.00	6.75	00.1
BBN	49.50	39.13	BBN Corp	28.04	0.06	0.0
CSRV	21.75	0.05	CompuServe Corp	10.75	0.01	3.0
EDFY	38.00	0.08	Edify Corp	13.63	-0.25	1.0
LCOS	32.75	5.75	Lycos Inc.	12.50	-0.25	-3.0
NETC	27.75	7.00	Netcom On-Line	19.83	-1.13	-7.0
NSCP	48.00	22.38	Netscape Comm. Corp	37.44	2.31	0.0
OMKT	49.40	6.50	Open Market Inc.	12.75	0.13	1.2
PSIX	14.50	1.30	PSINet	0.05	0.13	1.6
QDEK	40.00	2.00	Quarterdeck Corp	2.53	-0.22	-0.0
RAPT	27.50	0.08	Raptor Systems	11.25	-1.00	-13.0
SCUR	25.00	9.75	Secure Computing Corp	3.38	-0.13	-1.0
SPYG	22.00	0.06	Spyglass Inc.	3.38	6.25	7.1
YHOO	00.50	15.38	Yahoo! Inc.	33.50	1.00	-4.3

Exch	52-Week Range			July 3 Price	Wk Net Change	Wk Pct Change
AMD	48.30	10.35	Advanced Micro Devices	33.94	-0.00	-0.2
ADI	80.09	12.75	Analog Devices Inc.	37.00	0.75	2.3
CHPS	80.30	7.88	Chips and Technologies	30.00	-0.00	-0.6
CRUS	28.33	6.90	Cirrus Logic	40.00	0.01	0.0
CY	16.63	9.13	Cypress Semiconductor Corp	14.04	0.13	2.1
CYRX	30.00	11.50	Cyrix	30.13	-0.75	-0.8
INTC	100.75	64.13	Intel Corp	144.50	1.38	1.4
LSCC	62.60	38.75	Lattice Semiconductor	57.50	0.50	0.0
LSI	46.88	17.00	LSI Logic Corp	31.63	1.94	6.8
MCRL	54.30	12.00	Micrel Semiconductor Inc.	40.40	1.38	2.8
MU	40.50	30.00	Micron Technology	40.00	-0.50	1.2
MOT	80.44	44.13	Motorola Inc. (H)	80.44	2.44	3.1
NSM	32.25	13.00	National Semiconductor	31.10	0.13	0.4
TXN	40.80	40.30	Texas Instruments	87.00	1.13	1.5
VLSI	35.25	30.00	VLSI Technology	24.00	-0.08	-0.3
XLNX	40.00	24.50	Xilinx	47.00	1.90	4.0
ZLG	45.00	14.88	Zilog Inc.	19.25	0.08	3.4

Exch	52-Week Range			July 3 Price	Wk Net Change	Wk Pct Change
ADPT	46.38	17.00	Adaptec Inc	38.50	1.88	5.1
APCC	31.30	0.30	American Power Conversion	19.88	-0.81	-3.9
CBEX	5.00	0.03	Cambex Corp	1.44	0.00	7.0
CREAF	30.25	0.06	Creative Technology Ltd.	16.75	-0.50	-2.9
RACE	24.50	3.90	Data Race Inc.	11.87	-1.50	-11.4
DTM	13.50	3.33	Dataram Corp	9.00	-0.50	-5.3
EMC	41.75	40.50	EMC Corp	40.00	1.50	3.9
EMLX	21.25	12.80	Emulex Corp	15.00	-0.00	-2.4
ESCC	29.75	19.00	Evans and Sutherland	21.00	-0.13	-0.5
EXBT	17.50	9.38	Exabyte	10.05	1.00	8.3
ISLF	3.81	1.25	Intelligent [illegible] Systems	1.00	0.00	0.0
IOMG	29.75	12.63	Iomega Corp	20.44	0.63	3.2
IPLS	0.03	0.00	IPL Systems Inc.	1.31	0.00	18.7
KMAG	36.75	15.31	Komag Inc. (L)	17.44	6.00	0.3
MTSI	29.75	12.00	Micro Touch Systems Inc.	22.75	0.06	1.7
PNCL	9.75	0.99	Pinnacle Micro Inc. (L)	0.75	-0.44	-30.8
AQMS	6.38	2.38	QMS Inc.	3.38	0.06	0.0
QNTM	25.00	3.30	Quantum Corp	37.63	1.44	3.1
RDUS	3.30	0.19	Radius Inc.	0.11	0.00	0.0
SEG	50.03	18.13	Seagate Technology	37.02	3.44	00.1
STK	54.00	20.00	Storage Technology	48.38	2.31	5.0
TEK	49.19	40.80	Tektronix Inc. (H)	63.19	3.75	0.1
WDC	40.63	10.00	Western Digital Corp	32.50	4.50	2.8
XRX	61.13	44.63	Xerox Corp (H)	79.75	0.08	3.0

Exch	52-Week Range			July 3 Price	Wk Net Change	Wk Pct Change
AMSY	17.13	15.25	American Mgmt. Systems	20.00	1.50	3.9
ANLY	36.75	17.50	Analysts Int'l	32.00	-1.75	-0.2
AUD	50.13	36.63	Auto Data Processing	48.00	1.50	2.1
BDMI	40.75	39.75	BDM International Inc.	21.63	0.63	3.0
CATP	57.25	21.50	Cambridge Tech. Partners	31.75	-0.28	-2.7
CEN	53.13	29.00	Ceridian Corp	42.88	0.08	1.6
CDO	39.50	75.13	Comdisco Inc. (H)	29.00	3.44	13.4
CPU	40.40	13.50	CompUSA Inc	25.13	3.38	13.5
CHRZ	39.63	40.15	Computer Horizons	40.00	2.00	0.0
CSC	40.50	37.00	Computer Sciences	30.08	0.08	0.3
TSK	39.50	11.63	Computer Task Group	73.13	0.88	2.8
CDAT	40.88	12.75	Control Data Systems Inc	15.00	1.00	7.1
EGGS	10.40	3.63	Egghead Discount Software	3.87	-0.44	10.3
EDS	63.00	31.49	Electronic Data Systems Corp	62.50	-0.51	-0.3
INAC	40.03	15.38	Inacom Corp	32.50	1.00	3.3
INEL	10.75	2.25	Intelligent Electronics	3.81	0.50	0.0
KEA	40.13	10.00	Keane Inc	54.00	-0.00	-0.1
MICA	25.00	16.63	Microage Inc	10.88	1.75	0.2
PAYX	63.00	25.83	Paychex	40.25	3.25	8.0
PMS	54.38	33.13	Policy Management Sys.	49.87	1.31	-3.2
REY	40.63	13.75	Reynolds and Reynolds	10.06	0.00	3.5
SCBI	25.75	14.44	SCB Computer Tech. Inc.	22.75	-0.75	3.2
SEIC	50.75	17.75	SEI Corp	24.75	0.63	3.0
SMED	60.75	16.75	Shared Medical Systems	57.50	3.94	1.4
SSPE	33.38	12.75	Software Spectrum Inc.	12.81	-0.00	-1.6
SDS	80.75	49.38	Sungard Data Systems	46.33	0.00	1.2
VST	49.75	9.50	VanStar Corp	10.13	-0.50	-1.7

KEY: (H) = New annual high reached in period (L) = New annual low reached in period

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How to contact Computerworld

TELEPHONE/FAX

Main phone number .... (508) 879-0700
All editors unless otherwise noted below
Main fax number .... (508) 875-8931
24-hour news tip line .... (508) 820-8555

E-MAIL

Our Web address is www.computerworld.com.
All staff members can be reached via E-mail on the Internet using the form:
firstname_lastname@cw.com.
All IDG News Service correspondents can be reached using the form:
firstname_lastname@idg.com.

LETTERS TO THE EDITOR

Letters to the editor are welcome and should be sent to:
letters@cw.com.
Please include your address and telephone number.

MAIL ADDRESS

PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701

SUBSCRIPTION/BACK ISSUES

Phone .... (800) 552-4431
E-mail .... circulation@cw.com.
Back Issues .... (508) 820-8129

REPRINTS

Phone .... Michelle Olk, (800) 217-7874

CONTACTING CW EDITORS

We invite our readers to call or write with comments and ideas. It is best to submit ideas to one of the department editors as well as to the appropriate beat reporter.

Editor Paul Gillin (508) 620-7724
Executive Editor Maryfran Johnson (508) 820-8179

Department Editors/News

News Editor Patricia Keefe (508) 820-8183
Sections Editor Kevin Fogarty (508) 820-8246
Assistant News Editor Neal Weinberg (508) 820-8177
Assistant News Editor Mitch Betts (202) 347-6718
Assistant Sections Editor Michael Goldberg (508) 620-7789
Online Editor Johanna Ambrosio (508) 820-8553
Online News Editor Judith H. Bernstein (516) 266-2863

Senior Editors/News

Groupware, E-mail, messaging Barb Cole-Gomolski (760) 728-8858
LANs, operating systems Laura DiDio (508) 820-8182
Network/systems management Patrick Dryden (817) 924-5485
Application development Sharon Gaudin (508) 820-8122
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IS careers Julia King (610) 532-7599
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Midrange hardware, Unix operating systems Jaikumar Vijayan (508) 820-8220
Electronic commerce, Internet Mitch Wagner (415) 548-5513
Internetworking Bob Wallace (508) 820-8214

Senior Writers/News

Mobile computing, social issues Mindy Blodgett (508) 820-8168
@Computerworld Stewart Deck (508) 820-8155
PCs, servers, net computers April Jacobs (508) 820-8121
Security, government Sharon Machlis (508) 820-8231
Mainframes, high-end storage Tim Ouellette (508) 820-8215

Staff Writers/News

Telecommunications Kim Girard (508) 820-8223
New products, multimedia, low-end storage Matt Hamblen (508) 820-8567
@Computerworld Patrick Thibodeau (508) 820-8143
Client/server software, Unix apps Randy Weston (508) 628-4869
@Computerworld Wylie Wong (415) 548-5581

Opinions

Columns Editors Kevin Fogarty (508) 820-8246
Michael Goldberg (508) 620-7789
Steve Ulfelder (508) 620-7745
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Department Editors/Features

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Associate Editors/Features

Managing Rick Saia (508) 820-8118
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IDG News Service Correspondents

Paris bureau chief Jeanette Borzo (33) 1-4904-8001
UK correspondent Kristi Essick (44) 171-416-0701
Hong Kong bureau chief Jon Sidlings (852) 2535 4661
Tokyo correspondent Bob Guth (81) 33-358-6122

Research

Bob Fink, senior research manager (508) 820-8116; Kevin Burden, senior researcher; Laura Hunt, research analyst; Stefanie McCann, senior graphics coordinator; Matt Keefe, online researcher.

Copy Desk

Ellen Fanning, managing editor (508) 820-8174; Roberta Fusaro, assistant managing editor; Christina Arcardi Maguire, Jamie Eckle, senior copy editors; Kimberly Blackburn, Michelle Davidson, senior production copy editors; Pat Hyde, David Ramel, Monica Sambataro, Keith Shaw, copy editors; Jeremy Selwyn, online copy editor.

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Alan Alper, editor (508) 820-8115; Mary Brandel, executive editor; Anne McCrory, Catherine McCrorey, Joyce Chutchian-Ferranti, managing editors; Kimberlee A. Smith, assistant managing editor and online coordinator; Stephanie Faucher, art director.

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Contact: Johanna Ambrosio, Online Editor, (508) 820-8553 or johanna_ambrosio@cw.com.

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SAP R/3 leads others to take big iron swing

CONTINUED FROM PAGE 1

customers for the project. Horrigan said the tests worked well and his company is now ready to install the system for real-world use. Installation begins at the end of the year.

This hybrid model of a mainframe serving as the database for a client/server system would be especially attractive to users with huge transaction volumes who are seeking scalability and reliability — such as the retail industry, or global companies seeking to centralize data on a single box.

Retailers and many manufacturing companies are reluctant to toss their robust mainframes for the more flexible but less powerful client/server systems.

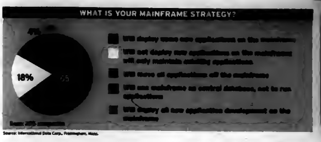
But competition is forcing many to make a reluctant transition because client/server systems let companies more closely analyze their business and gain a competitive edge [CW, June 30].

For example, customer pressure forced tool maker The Stanley Works to confront the issue. The company put R/3 on one large system to provide customers with a single, consolidated invoice.

CLIENT/SERVER HYBRIDS

Jim Gustavson, Stanley's vice president of information technology, said the New Britain, Conn., company decided to risk a pilot test of R/3 on the AS/400 because Stanley had invested heavily in AS/400 hardware and skills.

As more companies attempt a worldwide rollout of products such as R/3, they may want to turn to the mainframe as a way to provide reliable central management of R/3 data.



Source: International Data Corp., Framingham, Mass.

Analysts agreed that the R/3 port is the crown jewel in IBM's attempt to lure client/server users back to the mainframe.

So IBM has optimized the latest version of its DB2 mainframe database to act as the database server in an R/3 installation.

The three-tiered, client/server architecture still will be employed. The mainframe, which will hold the database and application programs, will be fronted by a Windows NT or RS/6000 Unix application server, and users will get the graphical R/3 interface at their PCs.

Early beta testers said the mainframe gives them flexibility for future expansion.

But not all of SAP's 2,000 mainframe R/2 sites plan a quick move to get R/3 up and running.

"We'll probably wait to look at R/3 until the other side of the millennium," said an MIS manager at a Houston oil company who requested anonymity. "We are only a few years into our R/2 rollout and still have more users to add, and the year 2000 issue will keep us busy in the interim."

On the midrange AS/400, it may also be a case of wait-and-see for some users.

"Until we get the eight- and 12-way AS/400 RISC machines [shipping next year], non-native applications like R/3 will actually perform better on Unix or Windows NT," said Bruce Bond, an analyst at Gartner Group, Inc. in Stamford, Conn.

Bond recommended that only AS/400 shops with $500 million or more in revenue — such as the $2.7 billion Stanley Works — should cut their teeth on R/3 now because of the high cost-to-performance ratio. □

NC users overcome woes

CONTINUED FROM PAGE 1

functions, track shipments and enable electronic commerce.

"Anytime you're an early adopter with any technology, there are going to be some maturity issues," said John Andrews, president of CSX Technology, the IT division of CSX in Jacksonville, Fla. "There were some problems with the early Java [operating system], but we have a very stable platform right now. We're rolling the [network computers] out into the field. If I didn't think they were going to work, there's no way I'd be sending them out there."

"We caution any clients who are thinking about using Java that the performance is largely unproven, and so are the benchmarks."

– Neil MacDonald, Gartner Group

Network computers — backed by major vendors such as Sun, Oracle Corp. spin-off Network Computer, Inc. and IBM — are pared-down desktops with no hard drives for local storage. Users download applications from a server or the Internet.

Network computers differ from Microsoft Corp.'s and Intel Corp.'s NetPC, which is a centrally managed version of the traditional PC.

Network computer proponents said having the applications based on one server instead of strewn across hundreds or thousands of PCs will drive down maintenance and support costs.

Vendors also tout price tags that come in well below $1,000, the base price for a Pentium-level PC.

But the much-hyped network computers took a hit recently when rumors started to fly that FTD, Inc., one of the first four adopters of the Sun JavaStation, was backing off after it found too many bugs.

But a spokesperson for FTD last week said the flower delivery service is still on board with JavaStation. A Sun spokesman said recent management changes at FTD simply had slowed down the project.

Still, concerns about buggy systems have been enough to warn away some people.

Neil MacDonald, a research director at Stamford, Conn.-based Gartner Group, Inc., has gone so far as to advise his clients not to jump on board Sun's JavaStation yet.

"We caution any clients who are thinking about using Java that the performance is largely unproven, and so are the benchmarks," MacDonald said. "This year is the time to experiment and define Java's role. In 1998, as applications arrive and benchmarks become standardized, things will improve."

Early rollout problems have plagued network computers from IBM, as well.

"I'm really frustrated with the IBM network computer," said Kalman Shor, assistant director of information systems at Michael Anthony Jewelers in New York. "It's not what they promised it would be. We expected IBM would have a plug-and-play network computing solution, but there's too much to do, and it's too much to get together."

Shor said he was told IBM network computers would cost less than $800 each, but he found that he had to add $300 to that price tag for the software to connect the machine to his server. "I can go out and buy a Pentium PC for $1,000," he said. "We're not going to put this on any desktops. I don't have to spend $1,000 for a glorified terminal. We bought one, but we're not going to buy any more." An IBM spokesman said Shor's problem was an aberration. "Most customers think speed and functionality is an improvement with our NCs over their old PCs. His problems are probably more about his software and setup." The spokesman added that IBM has sold more than 10,000 NCs. □

[illegible]

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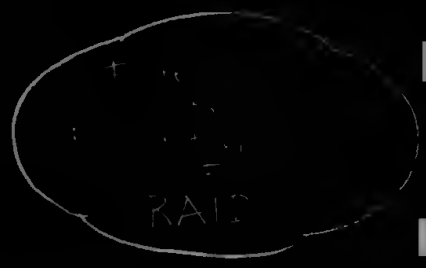

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COMMENTARY

"I'm not an analyst, but I play one on TV"

David Coursey

"Be a famous industry analyst — or just dress like one!" I'm not sure which part of that sentence caught my eye or even why it did. I was reading the tiny advertisements in the back of *Popular Science* (or was it *The New Yorker*?) when I saw it.

Sure, I'd seen it before — on matchbooks and even painted on freeway overpasses at Microsoft, where it sometimes appears on the underside of latte cups from the cafeteria — but I had never taken it seriously.

Until one day about five years ago, that is. Stuck in a deeply boring job at an industry weekly whose identity will remain safe with me, it suddenly dawned on me that if all those other people could become famous industry analysts, so could I. And so can you!

Here's my offer: I spent the past 12 weeks at Famous Analysts' School so you don't have to. I will share with you secrets I learned there — skills I use every day and that can help you better understand the computer and Internet industries that make our lives so interesting.

And although these opening paragraphs weren't serious, the rest of the column is. So here are some weapons for bushwhacking through industry hype and finding the meaning within:

Too much information can be a bad thing. I've sometimes thought that by Monday afternoon, having read a foot-tall stack of computer weeklies, the reader is left knowing less than when he started. My suggestion: Let the news age a little bit. There are very few things that you must know today, much less act upon.

Does it make sense? It's a simple but key test, and it often gets missed in the hype. Netscape stock at $172 a share? The resurgence of OS/2? A renaissance for DOS? Java, the universal language? If you can't make sense of it, there's a good chance nobody else can either.

Sometimes, exactly the opposite of X is true. Opposite of what? Well, anything you hear that can be addressed from a 180-degree position has the potential to be the polar opposite of what's really going on. Did Compaq really want to build RISC machines a few years ago? No, Compaq wanted Intel to lower its prices and speed development of the 486. When Intel did, Compaq bailed on what was called the "ACE Initiative."

Don't get caught in a religious war. I've always been very tolerant of religion, right up to the point where it starts making fools of people. My office door is plastered with zealots' mail — mostly from people who don't like my theory that Sun could be the next Apple — and it's hilarious to read. The Mac crowd can be the same way. Don't let something you love get in the way of seeing what's really going on. Nothing lasts forever.

Plan ahead, but don't count on the impossible. I am reminded of the cartoon that shows an Einstein-like scientist at a blackboard. There are many equations on the board, each of which ends, "and then a miracle occurs." It's always great when a miracle happens, but you can't count on one to save your intranet strategy.

Bonus thought (I had planned on divulging only five). The computer industry tends to overestimate what it can do in three years and underestimate what it can do in 10. I forget who gets credit for that quote, but it's true.

Class dismissed. □

Coursey is a consultant, analyst and editor/publisher of "coursey.com," an online newsletter available at www.coursey.com. You can E-mail him your ideas on critical thinking for understanding the computer business at david@coursey.com.

IS may get a break in Washington

Frank Hayes

Buried deep in the soon-to-be-finalized tax-relief bill now before Congress is a provision that would make it much easier for IS shops to hire independent computer consultants.

The House of Representatives has already passed a version of the law that effectively repeals Section 1706 of the Internal Revenue Code. Senators start thinking about it this week.

And if you're up to your neck in IS chaos, you should be thinking about it, too.

Section 1706 is a notorious tax regulation aimed at engineers and computer consultants. It works like this: If you hire a consultant through a third party, such as an agency or broker, you run the risk that the consultant will later be classified as an employee by the IRS — and you'll owe back taxes and penalties.

There's no way of being sure, in advance, how the IRS will classify a particular employee. But don't blame the tax man for that uncertainty. In this case, federal law actually prohibits the IRS from issuing any clear guidelines about whether workers will be classified as employees or independent contractors.

Oh, and one other thing: Section 1706 applies only to engineers and IT professionals, and only to independent consultants hired through an agency — not to the employees of big consulting firms.

If all that sounds pretty screwy, it helps to know that Section 1706 was pushed through Congress in 1986 by big consulting organizations that wanted to stick it to upstart independent consultants who were threatening to cut in to the big boys' business — a sort of Endangered Species Act for thoroughly unendangered Big Consulting.

After 10 years of trying, the independents are finally pushing back. This year, at long last, there's a better-than-even chance that 1706 will be replaced by a clear, specific test for identifying independent consultants.

That, in turn, would open the doors of many corporate IS shops that haven't hired independents for fear of running into tax problems.

Not surprisingly, this isn't the kind of tax reform that big consulting outfits had in mind. They say changing the rules now — when it's already hard to hire and keep top tech talent — would create chaos in the marketplace for IT workers.

Memo to Big Consulting: We've already got chaos. Now we're trying to survive it.

Chaos is coming from the barrage of new technologies that no IS shop can hope to keep up with, ranging from the Internet, Java and "push" to computer telephony, ActiveX and multitier client/server. Keep up? Hah! You can barely keep a list.

More chaos rains down because of the shortage of IS workers — not just technogurus, but ordinary IS professionals. That drought will last another six to 10 years.

And we're pelted with still more chaos because business needs are changing faster than we can crank out new systems, even if we could find and pay all the people we need.

Right now, IS shops are hip-deep in chaos, and the level is rising. It looks like the only people Section 1706 shields from chaos are big consultants.

In fact, deep-sixing 1706 can actually help IS shops survive the flood of chaos.

Corporate IS shops are already busting their budgets hiring consultants. That's not a what-if scenario — it's reality.

Making it easier to do business with independent consultants means IS shops will have more choices. More competition also pushes down consultant prices — and pushes up the quality of the work you pay for.

Will spiking Section 1706 solve all the problems of corporate IS? Nope. But it's a good start. Besides, what would you rather have — protection for big consultants or a better break for your IS shop?

Yeah, I thought so. □

Hayes is Computerworld's staff columnist. His Internet address is frank_hayes@cw.com.

The Back Page

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Dispatches & images from the fringes of the electronic frontier

Patent watch

Recently issued U.S. patents (number, inventor/assignee, date)

System that uses brain waves to control a cursor on a video screen. It analyzes brain waves from 64 electrodes on a user's forehead and makes horizontal or vertical cursor movements. The system would be especially useful for people who have severe disabilities. (5,638,826, Health Research, Inc., Albany, N.Y., June 17)

System for providing "price protection" to retail customers. Retailers can assure customers they are getting the lowest price with a system that automatically provides a rebate if it finds an advertised price lower than what the customer paid. It prints a check to be mailed to the customer. (5,642,279, New England Audio Co., Canton, Mass., June 24)

Convertible carrying case and work platform that lets users operate a notebook computer while standing up. The case has a shoulder harness attached to a rigid bottom that forms a horizontal work surface that rests against a user's stomach. (5,639,004, Truckin' Movers Corp., Durham, N.C., June 17)

Source: MicroPatent (www.micropat.com)

STRONGER THAN DIRT

Now they're selling software like soap. Kai's Photo Soap, a photo editing software package from MateTools in Carpinteria, Calif., comes in a box that looks like laundry detergent. But instead of delivering whiter whites to users, this "Super Strength Picture Cleanser" offers "20% More Bits Free." Take that, Procter & Gamble.

– Allan E. Alter

AFTERLIVES

1968

IBM researcher patents the one-transistor RAM cell

Robert H. Dennard

Dennard's invention, the one-transistor dynamic memory cell, became the standard for RAM chips and set the stage for the PC revolution. RAM started appearing in commercial products in the early 1970s. Today it's a $25 billion business. Last year alone, 2.5 billion units of RAM were sold at about $9 per megabyte. Before Dennard's invention, RAM was implemented with cumbersome and costly wired arrays of magnetic components that were too large and heavy for mass use.

1997

Fellow at IBM's Thomas J. Watson Research Center, Yorktown Heights, N.Y.

Today Dennard, 64, continues to do research on denser, cheaper transistors, as well as integrating RAM with microprocessors. For his invention of a simple RAM cell using just one transistor and a small capacitor, Dennard will be inducted into the National Inventors Hall of Fame in Akron, Ohio, on Sept. 13. So how much RAM does the inventor of RAM have on his home PC? "Sixteen megabytes, or maybe 32. You'll have to ask my wife. She's the expert," he says with a chuckle

Ultra mess

The Federal Aviation Administration is buying new Univac computers for its metropolitan air-traffic radar systems, according to an article in ***American Heritage of Invention & Technology*** magazine. Why buy more museum pieces? Because only the Univacs can run the FAA's air-traffic control software, written in a proprietary code called Ultra. The FAA says the alternative – a full-blown program of new software development – is "too dreadful to contemplate."

Inside Lines

Novell GroupWise on the block?

Novell insists there's no truth to it. But rumors continue to bounce around the industry that the Provo, Utah, networking vendor is mulling the sale of its GroupWise groupware and messaging software division. "GroupWise is not up for sale. It's doing very well," a Novell spokesman said last week. "I don't know where these rumors are coming from." But Jon Oltsik, an analyst at Forrester Research in Cambridge, Mass., says it wouldn't surprise him "in the least" if Novell put GroupWise up for sale within the next six months. "I've heard all the rumors, and although there's nothing concrete — yet — it does make perfect sense for Novell to continue to streamline its business, especially since the war is over," Oltsik said. "The groupware and messaging contest is now a race between IBM's Lotus Notes and Microsoft Corp.'s Exchange."

Sales force for rent

Another rentable groupware application is on tap from Lotus and Internet service provider Interliant in Houston. The companies will roll out SaleSpace, a rentable sales force automation application, later this month at Internet World, sources say.

A lovely view from the plank...

Marketing nightmare No. 23: You send out a spiffy, multimedia-laden demo disk of your product to 5,000-plus CIOs. Then you find out that many of them can't get the darned thing to work. But it wasn't just a bad dream for query tools vendor Brio Technology. A contractor forgot to load QuickTime on a demonstration CD of Brio's Web-based query software, making it nothing more than a conversation piece for QuickTime-bereft users. After the glitch came to light, Brio had to rush out a fresh batch of disks, along with an apology and an assurance "that the scurvy knaves responsible have been made to walk the plank."

How about boosting the product for a change?

Rumors that Microsoft, Sun and others are seeking to acquire Java software developer Marimba are untrue, according to CEO Kim Polese. The start-up just wants more cash to grow up and issue stock. But sources say the cover girl of the Internet world was chastised last week by venture capitalists, who complained Polese spends more effort publicizing herself than shipping products.

Tick, tick, tick ... ka-ching, ka-ching!

All of the hype surrounding the impending year 2000 programming disaster is having a positive net effect on services vendors. Last week, one of the leading year 2000 vendors — Peritus Software Services in Billerica, Mass. — launched its initial public offering on the Nasdaq Stock Exchange and was Tuesday's biggest gainer, surging 10 3/4, or 67%, to 26 3/4 in its first day of trading.

Dr. Ruth does Redmond

Famed sex adviser Dr. Ruth Westheimer recently toured Microsoft headquarters in Redmond, Wash. Westheimer told The Associated Press she worried that working 80-hour weeks and interacting via E-mail would shrivel employees' sex lives. But Westheimer was happy to discover that the park-like campus offered plenty of places for romantic interludes.

Sex sells, but free software tools may be even more dangerously enticing. At least that's the message in a recently issued warning from America Online and the National Computer Security Association. It seems that hackers used to disguise their password-stealing software as pornography in an effort to get unsuspecting users to click open the programs. The last few weeks, though, the Trojan horses have taken a potentially much more lethal turn: They're being billed as free software upgrades. If you have a message, a warning or even a news tip, send it along to news editor Patricia Keefe at (508) 820-8183 or patricia_keefe@cw.com.

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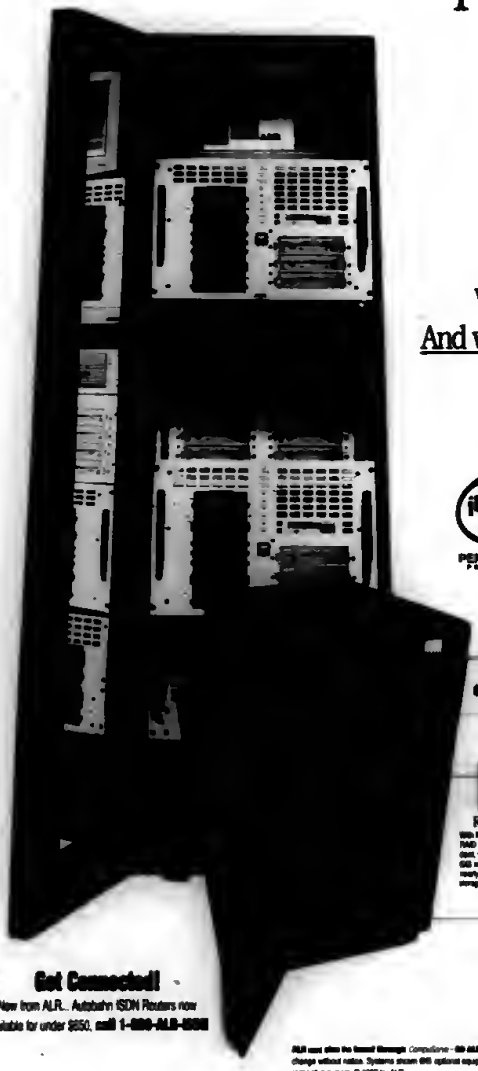

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InfoWorld April 14, 1997

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